No. 17

aspects

aspects

of assessment in Ontario

Published by

Ontario

Ministry of Revenue | Assessment Division | Assessment Standards Branch

Arthur K. Meen
Minister

D. A. Crosbie
Deputy Minister

EDITOR

Jeanne MacDonald

Associate Eds
Barbara Pleva
William S. Wu

EDITORIAL BOARD

P. G. Gillis
A. N. MacKay
W. J. Lettner

ADVISORY COMMITTEE

H. C. Fletcher
Ottawa-Carleton Regional Office
1729 Bank Street
Ottawa, Ontario 613-731-2620

J. A. Smith
Eastern Ontario Assessment Area
Hastings-Prince Edward Assessment Office
80 Division Street
Box 520
Trenton, Ontario 613-392-2501

W. S. Jackson
Central Ontario Assessment Area
Central Ontario Area Office
2450 Victoria Park Avenue
Scarborough, Ontario 416-491-0836

M. Lumsden
Central Ontario Assessment Area
Barrie Regional Office
109 Ferris Lane
Barrie, Ontario 705-728-2270

L. Stanshall
Brant-Haldimand-Norfolk Regional Office
63 Charing Cross
Box 1176
Brantford, Ontario 519-759-6310

W. C. Garnier
Western Ontario Assessment Area
London Office
Treasure Island Shopping Center
R.R. 4
London, Ontario 519-681-0050

C. A. Wilson
Northern Ontario Assessment Area
Northern Ontario Area Office
1349 Lasalle Boulevard
Sudbury, Ontario 705-560-1450

All opinions expressed in *Aspects* are those of the authors. These opinions do not necessarily reflect or represent those of the Ministry

Ontario. Ministry of Revenue. A
Aspects

May 1975 1975
htkx c.1 BAS

OCT 22 1980

Editorial

An apology would seem to be the first order of business, because the article we promised you on revisions to The Land Speculation Tax Act is not to be found in this issue. This is due partly to space considerations and mainly to confusion among the editorial staff regarding the subject matter itself. We are now making a valiant attempt to straighten ourselves out, and hopefully we will be able to write a lucid article for *Aspects* #18.

Despite our own confusion, we have been able to collect a number of excellent articles by various authors for this issue of *Aspects*. Among the highlights are an introduction to the subject of quality control and its role in the assessment function; Part II of an article on the effects of zoning by-laws on market value; and a discussion of the rationale for the decision to assess at market value.

We have several out-of-province contributions as well, including a summary of the recent proposals for provincial takeover of assessment in Nova Scotia, and a general overview of the introduction of computer techniques into assessment in San Mateo County, California. The latter article will be followed by a more detailed analysis in *Aspects* #18 of that County's computerization of multi-residential properties. We are also reprinting a speech presented last summer in Ottawa by Mr. Ir. J.L.G. Henssen, on the topic of cadastres and land registry systems.

As promised, we have again submitted the queries received from assessors to Mr. P. G. Gillis, who responds to them in our regular *Question and Answer column*. We would like to thank those assessors who have sent questions to us, and to urge anyone with a concern to let us know.

Contents

no. 17, May, 1975

- **Assessment Practice**
  - Everything you ever wanted to know about quality control — P. Smith 2
- **An Overview of Data Management in Property Assessment** — F. L. Jung 11
- **Appraisal Study**
  - Socio-economic impacts of zoning by-laws — W. C. Muger 7
- **Comparative Assessment**
  - Proposals for assessment reform in Nova Scotia — J. R. Cameron 23
  - The background to assessment reform — J. S. Purdon 20
- **Special Topic**
  - CADASTRES and their relationship with real property assessment — IR.J.L.G. Henssen 28
- **Case Law**
  - Liability to assessment – tenant-occupied crown lands 17
- **Question and Answer Column**
  - Mr. P. G. Gillis speaks on licensing, relationship with IMA and the Valuation File 26
- **Communications**
  - Ontario shares its Valuation File 18
  - Advisory Committee . . . . . ISC
  - Regional Delegates 10

- **Cover Design/Photo** W. S. Wu

Tech info: upper: Leicaflex SL 400/6.8 Telyt-R, TX film rated at 3,200 ASA, 1/2000 sec. F8, in Diafine. lower: Leica M4 135/4.5 Hektor, PX film rated at 125 ASA, in-camera montage.

FINANCE LIBRARY
htkx
JUL 19 2013
Ontario
Ministry of Finance

Everything you ever wanted to know about

QUALITY CONTROL

(But were afraid to ask!)

Quality Control! A name designed to strike terror into the hearts of production managers. The scourge of machine shops, assembly plants, and assessment offices around the world!

Perhaps a slight exaggeration has been permitted to enter here, but this is a common impression of quality control among the misinformed. It is, nevertheless, a mistaken impression — one nurtured by countless organizations with groups in their ranks masquerading under the title "Quality Control Department." This paper will outline some of the basic principles, history, and organization of quality control in general, and then will discuss the role of quality control in the assessment function in Ontario.

But before launching into the specifics of this frequently misunderstood and oft-maligned discipline, let us take the time to clear up some misconceptions.

Quality Control is not: a sophisticated name for mere inspection, in either a manufacturing or a service environment.

It is not: one individual department or section upon which falls complete responsibility for the quality of goods or services produced.[1]

It is not: a body of statistics or data fed into a computer, followed by frantic efforts to correlate the output to whatever is being produced.

And finally, it is not: a spy network, *viz* CIA, KGB, SMERSH, etc., instituted by management to patrol an organization or its employees.

What is it then?

The meaning of quality

Lord Kings Norton said, "Quality is a jewel with many facets. There is a quality in the sense of a high degree of freedom from error. There is a quality in the sense of having ingredients of guaranteed excellence.

"Products must look good and be good.

"Management needs the tool we call Quality Control to achieve the second aim."[2]

What a simple description! Yet, that is precisely what quality control is: a management tool to assist in meeting the company's quality objectives. There are many other definitions, some quite a bit lengthier and more technical than Norton's, but the same basic principles come through: a management tool — a philosophy — an attitude of mind.

In more practical terms, quality control is that part of a production operation that is concerned with ensuring that the finished product achieves certain established standards of quality within the context of meeting the organization's total production objectives.

An attitude of mind

It is the philosophical aspect which is perhaps the most important in the long run, for a quality control program can never be totally effective or successful unless every individual within an organization accepts his share of the responsibility for the quality of a product or service. Ultimately, the goal of Quality must be pursued from beginning to end of the production cycle; in the long run, it is self-defeating — and expensive — merely to "catch" defective products once they are finished. To be properly understood, then, quality control must be seen as an integral part of an organization's overall operation.

Therefore, familiar quality control techniques in industry and government should be geared specifically toward creating an attitude of mind conducive to meeting the quality objectives of the organization. A primary goal is to encourage and foster participation among employees at all levels in the pursuit of the set quality standards. A major responsibility of the actual Quality Control Department is to provide "a channel of communication for product-quality information amongst all concerned."[3] The Quality Control Department of an organization is fundamentally a vehicle for organizing, maintaining, and publicizing the quality program. But the responsibility for achieving quality belongs to every employee.

PETER SMITH
Quality Control Section
Field Services Branch

From medieval guilds to mass production

Quality Control has undoubtedly been with us, in one form or another, for a lot longer than we might imagine. In its broadest sense, quality control can be traced back at least to the Middle Ages. The control of quality was a primary concern of the medieval craft guilds. Rigid standards were established, and every item was closely examined by the master craftsman to insure that there were no imperfections. Indeed, a guild apprentice could only become a craftsman if and when he reached a certain level of quality. Individual success depended upon achievement of specific quality standards, and thus quality was a fundamental concern for each individual. The approach was rudimentary by modern standards, but even so, we can see an attempt to instill in every employee a sense of responsibility for product quality — and this is still a primary goal of the Quality Control Department today!

Standardization and inspection

The tradition of individual responsibility for quality of workmanship has been carried on by skilled artisans down to the present. But the Industrial Revolution profoundly changed the very nature of production, and this meant changes in the concept of quality control as well. Mass production — perhaps the most important legacy of the Industrial Revolution — forced standardization of both products and processes. When Eli Whitney contracted to supply the United States Army with 10,000 muskets around the year 1800, he undoubtedly attempted to standardize production in order to meet his deadline. And standardization, of course, implies quality control.

Mass production techniques accelerated and forced a continuing effort toward more concretely defined quality standards. Tremendous changes occurred in industrial structure and organization. Yet, for a long time, quality control continued to consist of inspecting each finished product.

The birth of modern quality control

Normal, orderly industrial progress was disrupted by the upheavals of World War I, and changes in quality control techniques were directed toward fulfilling short-term military needs. The real advent of modern statistical quality control was hastened by the armament requirements of World War II. Production volumes were so tremendous for the war effort that the long-tried (but not always true!) method of 100% inspection at the end of the line was impractical, if not impossible. The statisticians therefore got to work, and sampling procedures were developed.

When normal industrial production resumed after the war, the new statistical techniques of quality control were retained and improved. Process control soon evolved — that is, an examination of the various production operations as well as of the actual product. This development arose from the growing realization that correct procedures were crucial to final product quality — particularly in a complex mass production environment. Prevention of initial production errors would result in less scrap material and fewer rejects at the end. It was at this point that the importance of involving every employee in the quality effort became apparent.

Over the past twenty years or so, both the statistical and psychological aspects of quality control have been refined and improved. More and more production and service organizations have instituted quality control programs. The list is exhaustive — automobiles, pharmaceuticals, food processing, hotels, airlines, schools, banks, and property assessment departments, to name just a few. Today, quality control is a highly sophisticated management tool, and a vital part of any modern organization.

Organization

In many organizations, the quality control function is divided into two groups, Quality Engineering and Quality Assurance.

Quality Engineering

Quality Engineering is the group which works with management during the initial phases of developing a quality control program, helping to set the standards which are to be achieved. Quality Engineering has a responsibility to liaise with the design, methods and operations research groups, assisting to establish standards, define acceptance limits, and test product reliability.

The role of Quality Engineering in defining and setting realistic standards is perhaps one of the most critical parts of the quality control operation. If there is a failure to communicate at this stage, subsequent quality control procedures will be ineffective. Proper and achievable quality standards must be defined and clarified from the beginning. We may speak glibly about acceptance sampling and other inspection procedures, but these techniques can never compensate for the often catastrophic effects of ill-defined and unfeasible standards.

The job of creating the environment within which a Quality Control philosophy will flourish, which could merit

a group or section all to itself, is also generally the responsibility of the Quality Engineering group.

Establishing a quality control program in industry

An example of an actual experience in industry will perhaps better illustrate the role of Quality Engineering. This writer had the experience several years ago of being involved in the task of establishing a Quality Control Department in the Canadian branch of a large American corporation. This company, an established manufacturer of forestry equipment, was acquired by the American firm but retained its Canadian management team. It had not been exposed to the philosophy or principles of Quality Control before. The only previous means of assuring quality had been shop floor inspection. Design and quality standards were loose, to say the least.

Management's objective in setting up a Quality Control Department was to improve quality along with the modernization and increase in production made necessary in the face of growing competition. Creating an attitude of "quality-mindedness" throughout the plant was a major goal.

A Quality Engineering group was established and began to apply the familiar techniques of regular, plant-wide quality progress reports, quality-operator-of-the-month awards, and quality bulletin boards. A systematic design review operation was set up to examine specifications and standards. Production management changed the assembly line method from the standard multi-station operation process, i.e. one specific set of operations performed by assemblers at each of several line assembly points, to a total assembly technique involving several gangs who build the product from start to finish. By adopting this method, management hoped to develop pride in workmanship and to improve employee morale. After coping with certain problems and frustrations, the program eventually led to a successful production and quality performance.

Zero defects

In recent years, new approaches to various aspects of quality control have been tried, with mixed results. One of the more interesting psychological steps toward inducing "quality-mindedness" in an organization was the introduction of the "zero defects" concept in the early 1960's. Striving for perfection is at best a frustrating task, and aiming for absolutely no defects at all in a manufacturing environment is practically impossible. But the objective of such a program was to motivate the employees to try to "do it right the first time," as one of the slogans put it.

The results were generally unimpressive, and "zero defects" all but passed away toward the close of the 1960's. The writer recently contacted two organizations that were known to have tried the system. It was found that Company A, a medium-sized manufacturer, still operates a "zero defects" program, but in "a low-key way," to quote the quality control manager. The system had proven successful enough to justify its continuation by the resultant low spoilage (scrap and rework) costs as a percentage of sales.

Company B, on the other hand, has discontinued its "zero defects" program. This is a huge corporation in the communications field, and according to the quality control manager, massive changes were made in the quality control program a year ago. It was decided that "zero defects" and other approaches were too ineffective to justify the costs. So these were eliminated, and today the quality control program is geared largely toward "vendor quality" — that is, ensuring that the products purchased from outside producers meet a specified acceptable quality level.

These examples serve to illustrate that the task of Quality Control, to establish the environment for a successful quality program, is one requiring a great deal of stamina and commitment.

Quality assurance

The second group is Quality Assurance, which is responsible for conformance appraisal. It must answer the question: does the finished product meet the objective quality standards?

In the early years, shop floor inspection fulfilled the requirements of Quality Assurance. The big difference in inspection today from that of the 1930's is the advent of statistical methods. Control charts, acceptance sampling, and other advanced statistical techniques have provided inspection with a high degree of sophistication, making it more effective and useful to management.

The emphasis today in Quality Assurance is on process evaluation and control, which was explained earlier. Once we know how a process is behaving, what it is capable of, and where the potential trouble spots lie, we are in a better position to deal with quality *and* production commitments.

Control charts are another tool in the overall effort to control the production process in a manufacturing environment. Establishing control charts at the different stages of a production operation serves two purposes. First, by measuring and plotting the variability which exists in every operation, control measures can be implemented *before* errors are made, before unacceptable results are produced. Secondly, the machine operator usually learns to read the charts faster than anyone else and will take any action required to correct a process, should it be necessary. It also provides him, the operator, with an involvement in the total quality objective. The operator is ultimately the key to quality.

Statistical sampling techniques have relieved Quality Assurance of the need to do 100% inspection. The laws of probability and statistics are utilized to cover a multitude of confidence and precision limits by which products may be accepted or rejected.

Documentation and communication

Of course, a very necessary part of any quality control program is the documentation and reporting required for analysis, for initiation of remedial action and, most important, for keeping management informed of progress toward their objectives. Much of the responsibility for preparing and transmitting information to management falls on the Quality Assurance group, since it collects and analyzes actual production data. However, it should be pointed out that Quality Engineering must also maintain an effective

communication network with both management and employees, so that the quality standards are properly defined and clearly understood.

The speed and accuracy of this flow of information is vital to its effectiveness. "Information must be developed in systematic fashion if it is to merit a confidence level warranting immediate credence and use. Credibility is at the heart of communication, and the speed with which information is communicated determines its worth."[4]

In spite of a semi-frivolous comment at the beginning of this article, the computer can be indispensable in facilitating this flow of information. Quality standards can never be ensured by the computer, of course. But because of its ability to produce data quickly, the computer can and does play a useful role in quality control operations. Complicated statistical computations, such as multiple regression, frequency distribution, and analysis of variance are performed much faster by the computer than by the human. Delegating this sort of task to the computer not only speeds up the information flow — thus keeping the quality control effort up to date with existing conditions — but also frees the human resources for the other aspects of the program.

Quality Audit

Another function often incorporated with the Quality Assurance group, but also quite capable of standing as an independent unit, is Quality Audit. Its responsibility is to provide management with unbiased reports on quality performance within the organization.

In a sense Quality Audit is the "police" operation of the Quality Control Department, and to be effective, the higher the level to which it reports, the better. To the Quality Auditor nothing is sacrosanct. His job is to check the inspection procedures, the design standards, the receiving inspection sampling plans, etc. In fact, anything throughout the organization to which quality control may apply is a possible target for the Quality Auditors.

Unfortunately, management does not always utilize the Quality Audit function as effectively as it might in its efforts to meet quality objectives.

The foregoing describes a typical organization for a quality control operation. It is by no means the only type. Even the name itself may be a misnomer. A. F. Cowan, in his book *Quality Control for the Manager,* proposes that a more appropriate title would be Quality Measurement, quality being the amount of imperfection in a product.[5]

But names are unimportant in the final context. What is important is the degree to which management is prepared to commit itself to the pursuit of quality. There are certain industries and services where management has little or no say in the matter. For example, in the food processing, pharmaceutical, and automobile industries, government regulations and consumer pressures dictate quality requirements.

The cost of quality

But in most instances, management does determine the quality standards. And in establishing those standards, several factors must be considered. First, there is the whole issue of reality. Quality is an important goal; and precisely because it *is* so important, care must be exercised to ensure that the quality level is realistic within the context of production commitments and organizational limitations. A quality standard is irrelevant and useless if it is unattainable.

A second consideration, closely related to the first, is that of cost. Like everything else, quality has a price. And it follows that the cost of quality must vary according to the precision requirements in the quality standards. There can be too much just as well as too little quality. Consider the buildup of relative costs:

Prevention costs include — Quality Engineering personnel; planning of the overall quality control program; design and reliability review; training of personnel.

Appraisal costs include — Quality Assurance personnel; inspection; receiving inspection (inspection of the component materials that are purchased from outside by a manufacturing operation); audit costs.

Failure costs include — scrap labour and material costs; rework labour costs; expenses incurred by field failures.

The budget for quality is therefore a decision to be weighed carefully by management insofar as what it expects from its quality control program.

What the management of an organization will undoubtedly get from a properly established and efficiently administered quality control program is: improved product or service quality; a reduction in overall costs; and an improvement in employee morale.

Quality control and assessment

Anyone who has managed to read this far must be wondering where and how assessment fits into the quality control picture.

The Assessment Division is a manufacturing organization with a difference. The product? Over 2½ million individual and/or collective assessments of real property spread across the Province of Ontario. The methods of production? Cost. Income. Comparative Sales. Negotiation. Each of these methods is subject to what we in the quality control field call "assignable causes." (An assignable cause is an occurrence which falls outside a normal distribution pattern, the reason for which can usually be explained after investigation and analysis.)

The quality standards — market value and equity

Quality control of assessment poses many unique problems. This is because the quality standards of the product are neither readily definable nor precisely measurable. In simple terms, the standards are market value and equity. Market value has been defined in The Assessment Act; but what is the exact market value of a specific property? The volume of assessment appeals is convincing evidence that market value is hardly a cut-and-dried standard. Providing a fair and equitable tax base for local governments across the province is a plain enough goal, but how does one quantify the degree of fairness and equity?

Nevertheless, the goals of market value and equity must be pursued because, like the automobile industry, the

Assessment Division is not entirely free to set its own quality standards. These are the requirements set out in legislation, and thus they are the quality standards. The approach of the Division's quality control section to these problems so far has been to specify limits of acceptability, albeit arbitrary ones, simply in order to provide us with a yardstick. For example, the current conversion of assessment data to a computerized Valuation File has necessitated certain quality control procedures as a means of assuring province-wide consistency and quality. An acceptable quality level (AQL) was selected by management, and a correlating sampling plan was drawn up and coordinated with the data conversion (coding) operation.

Follow-up audits were then necessary to ensure that the correct procedures were being followed, and to give us an indication of the quality level relative to the set standard.

Reassessed values are also being measured by the quality control section as to their "degree of imperfection." This is done by frequency distribution analysis of assessment-to-sales ratios and by regression analysis of specific variables.

Standardization of assessment procedures

However, as has been observed earlier, measuring the results of production is no substitute for well-planned and lucidly defined procedures. Quality cannot be injected into the product at final inspection. It has to be built in at the various stages of operation. In other words, inadequate methodology and processing generate inadequate quality. It was with this point in mind that one of the first projects in which the quality control section became involved was the creation of a province-wide audit plan, aimed at standardization of assessment procedures.

The amalgamation of over 200 separate assessment authorities under a centralized administration has created problems. A major one has been getting everyone across the province to do things the same way. Standardization of procedures is, under these circumstances, a time-consuming venture at best. Much progress has certainly been made, but much also remains to be done.

A variety of approaches to assessment

In general, quality control within the Assessment Division in Ontario operates under the same fundamental assumptions, goals, and methodology as quality control in any other organization. The organization of the quality control function is far less formally structured than the typical model that was outlined earlier. And certainly many of the problems posed are difficult and unique. But the basic purpose of quality control is the same: the goal is to establish and maintain assessments at a certain quality level, given the legislative requirements of market value and equity, and given also the necessity of producing a viable tax base for Ontario's municipalities.

To this end, the quality control section is involved in a variety of projects. Some are aimed at standardization of procedures, others are concerned with measuring the quality level of assessment data in all forms — from codes on conversion sheets to property classifications to final assessed values. And at present, these efforts have met with varying degrees of success. No doubt new programs and more sophisticated measurement techniques will be introduced in the future. But, in the end, the quality of assessment in Ontario will depend upon the assessors of Ontario and upon their commitment to the goals of quality which have been set.

Conclusion

It is hoped that the reader may have gained some useful insights from this paper. It was not the writer's intention to provide an in-depth technical treatise on quality control, but rather to offer a general discussion of a highly complex and often misunderstood field of endeavour. A proper understanding of the quality control function will perhaps remove some of the aura of mystery which has often surrounded it — and may even allay the fears of those who have been afraid of it.

At its best, quality control is a useful and very necessary discipline in a world of mass production and standardization. Its value ultimately rests with management. □

FOOTNOTES

[1] It should be made clear at the outset that quality control techniques can be applied to both products — such as automobiles — and services — such as assessments. Whenever the author uses the word "product" in this paper, it should be taken by the reader to include a service as well.

[2] Lord Kings Norton, in A. F. Cowan, *Quality Control for the Manager,* revised edition (Oxford: Pergamon Press, 1966), foreword.

[3] J. M. Juran, ed., *Quality Control Handbook* (New York: McGraw-Hill, c. 1962), S. 6-42.

[4] T. Hanold, "An Executive View of MIS," *Datamation* (November, 1972).

[5] Cowan, p. 31.

Socio-economic impacts of zoning by-laws

Part II of
THE EFFECT OF ZONING BY-LAWS ON THE MARKET VALUE OF PROPERTIES

A graduate in Economics from Waterloo University and the University of Toronto, Mr. Muger joined the Assessment Division in 1971 after serving as a Field Officer for the Municipality of Metropolitan Toronto. For three years he assisted in implementing the Valuation Manual for exempt and special properties. He currently works in the Multi-Commercial High Rise section at the City of Toronto office. Part I of Mr. Muger's paper appeared in *Aspects* #10 (Winter, 1973). [Ed.]

WALTER C. MUGER
City of Toronto Assessment Office

Introduction

Zoning by-laws are of modern origin. They were introduced in North America a little over half a century ago. Until recent years urban life was comparatively simple, but with the great increase in and concentration of population, problems have developed which require, and will continue to require, additional restrictions in respect of the use and occupation of private lands in urban communities.

Zoning, which is a method of regulation of land use, is essentially an attempt to improve, as well as to prevent deterioration of, the urban community. Private developers have been compelled by zoning regulations to start providing features that improve the quality of new buildings and the environment.

The premise upon which zoning rests is that the private market for land use, in a mature urban society, cannot be permitted to make uncontrolled land allocations, because this would create severe diseconomies in the urban development pattern. Since land pricing mechanisms do not take account of externalities occurring outside the site, zoning is required to curb and, where necessary, prohibit land development decisions that produce externalities considered undesirable.

In a stable economic system, and in the absence of excessive speculation in the real estate market, zoning regulations in certain areas could bring about stabilization of land values. In spite of the many advantages and the great desirability of exclusive zones, zoning by-laws as such have not yet accomplished the maximum benefits in urban land use planning and control.

Zoning regulations have generally been based on the theory of *highest and best use* of urban land. High-density coverage of commercial sites in urban areas has been overemphasized, which has led to high pricing of urban land. In the case of residential areas with high-density coverage, over-crowding and lack of outdoor recreational facilities have resulted. Under these conditions, zoning regulations have overlooked the social aspects such as human values, sociometrics and social structure in an urban community.

Some economic effects of zoning by-laws

Land is one of the major factors of production. Urban land in particular is considered to have value because of its potential to produce income in the future. Labour and capital are components of production which are applied to

the development of the land in order to generate the anticipated income. Although the *aggregate* physical supply of land is fixed, its *economic* supply is constantly shifting due to competition that sets preferences as to which alternative uses a particular real property will be subjected. Furthermore, competition among potential users and locational attributes of land are some of the key factors which determine the value of land.

Viewed in terms of economic theory, the effective use of a parcel of land is determined in the imperfect urban real estate market. Consequently, price becomes a function both of the costs of improving land and of the *net* income or return realizable by the development of the land in question.

Value and income potential of property

Because of its potential to produce income in the future, urban land is considered to have value. This value is based on an assumed plan which is the sum of all the net land incomes that will accrue in perpetuity, discounted for the period of time that will elapse before they are realized by the would-be investors.

Under the circumstances, value is relative and cannot be considered in connection with one factor alone, but must relate the various factors as exchangeable items. It must also relate to human utility and scarcity of services as well as to effective demand. However, *value* must be related to the *highest and best use* of the real property not only on the market, but also to the individual owner in question. A frequently-made assumption is that the permissible use for a given property under existing zoning by-laws and building codes is necessarily the *highest and best use.*

Optimal use depends on the economic supply of, and the effective demand for, property suited for various uses as well as the economic value of *situs* (physical location).[1] In situations where there is no reasonable equilibrium of these factors, the highest permitted use will not be the highest actual use realized. For example, an owner may choose a permissible non-conforming usage for his property under the existing zoning regulations. Consequently, the highest and best use of that property may differ from that of the neighbouring properties which do not benefit from such legal exemption from conformity. Under such conditions, the value to the owner should relate to properties being similarly used or which are zoned to permit the type of use to which the owner is subjecting his property.

If the highest and best use of urban land is to be achieved by zoning ordinances permitting high density use in similar properties, and if we assume that the site is zoned for, say, commercial use, and that the structures erected thereupon will be income-producing, then over-improvement of the site is imminent. Subsequent to this, over-crowding is likely to occur, generated by the desire of the developers and entrepreneurs to realize faster returns on their investments. This ultimately leads to operation beyond optimal level, culminating in rising operating costs with a consequent increase in diminishing returns on the property — subject to certain constraints such as economic supply of land, financial outlay and the level of aggregate economic activity. Clearly, the concept of highest and best use of land is of paramount significance in any valuation process, and should therefore be given due consideration by the appraiser and the assessor, both of whom should complete their final valuation analysis with a correlation and interpretation of how various site characteristics affect the value of a particular property.

Zoning by-laws regulate the extent of use of land and type of structure erected thereupon. However, where changes in zoning by-laws increase the scope of use of land and structures upon it, the developers are willing to invest in such lots with the anticipation of greater returns on their investments. The typical model, which is familiar to both the appraiser and the assessor, states that the value of land is the expected aggregate *net* annual return on the land, expressed as a percentage of the annual rate at which the total investment is estimated to be amortized annually.[2] If the expected net annual return is the difference between

> *"All business purely local — all which locality — should devolve upon the local Power may be localized, but knowledge*

gross revenue and expected costs, and assuming that there is *no recapture rate,* then

$$\text{Land Value (est. Market Value)} = \frac{\text{(Gross Revenue)} - \text{(Total Expected Costs)}}{\text{Capitalization Rate}}$$

It can be readily deduced from the model that income (given by gross revenue and total expected cost differential) is a function of the capitalization rate, given a particular estimated market value. That is, the greater the capitalization rate, the greater the income. Conversely, the relationship between capitalization rate and estimated present market value is an inverse one. That is, the greater the capitalization rate, the smaller the estimated market value. On the other hand, if the gross revenue is much greater than the total expected cost, and if the capitalization rate does not increase rapidly over time, then the estimated market value is likely to appreciate. The estimated market value is, therefore, inversely proportional to capitalization rate and directly proportional to income.

It should be recognized that although changes in zoning by-laws permitting high density, especially in commercial properties, tend to appreciate real property market values, the anticipated income therefrom is affected by factors such as the magnitude of vacancy rate for competitive commercial space, supply and demand, rental rates, collection losses, and most important, location of and accessibility to the property.

Social and political implications

Man's use of land is based on the physical, economic and political characteristics of the property. Social implications are found in the institutional relations which dictate acceptable types and degrees of land use.

For changes in zoning by-laws to be effective, they must take into consideration not only the economic aspects of the urban population, but also the social structure in the municipality, with due concern for human values, behaviour and interaction.

Indiscriminate zoning of an area for a particular use tends to bring about a controlling social or economic

position in relation to other areas. This kind of control is referred to as *dominance,*[3] which is usually manifested either vertically or horizontally, applying to like uses and multiple use areas respectively. Furthermore, indiscriminate zoning of land for a particular use is likely to encourage *segregation*[4] — a process related to clustering. It is a selection process by which homogeneous units become grouped together to form clusters — a process which is readily effected by zoning by-laws since the latter tend to group homogeneous land use together. Zoning by-laws can be, and are, used to effect *centralization* and *decentralization*[5] of population in the urban area. With this comes *invasion* — an interpenetration of one population group or use area by another, the difference between the new and old being economic, social or cultural.[6] Also incorporated in this is *succession*, where the new population groups or usage types finally displace the former occupants or uses of the area.[7]

> *concerns only single*
> *authorities. . .*
> *must be centralized."*
>
> John Stuart Mill
> *Representative Government*

Effects of invasion and succession

The "invasion — succession effect" is exemplified in various parts of the City of Toronto. In 1966 a Toronto developer purchased most of the single-family dwellings on the east side of Duplex Avenue and the south side of Orchard View Boulevard. At that time, approval was expected in 1968 for changes in the zoning by-laws, which would permit high-rise commercial and residential uses at the northwest corner of Yonge Street and Eglinton Avenue — now known as the *Yonge-Eglinton Centre*. The same process took place for the present High Park residential complex whereby most single-family units were purchased by developers to make way for high-rise residential use.

Currently, there is imminent invasion and succession taking place in a particular area of the City of Toronto. This area is bounded by Wellesley, Parliament, Sherbourne and Gerrard Streets. It is alleged that this property has been bought by a developer for an extension of the St. Jamestown high-rise residential and commercial complex. If the allegation is in order, then the present occupants will be forced to vacate the area to make way for new occupants.

Another case of gradual invasion and succession here in Toronto can be observed taking place in the so-called Chinatown area — located in the vicinity of Dundas Street, Bay Street, University Avenue, and parts of Elizabeth and Elm Streets.

The zoning by-laws which permitted erection of the Downtown Holiday Inn, the expansion of the Gray Coach Bus Terminal to Elizabeth Street, and the construction of high rise office buildings on University Avenue and Elm Street are obviously exogeneous forces of invasion to the area, which in time are bound to lead to succession. An even greater impact of invasion and succession is likely to be felt by Chinatown if and when the construction of the $250 million T. Eaton Shopping Centre by the Fairview Corporation is completed; this will attract other similar business enterprises to the area. An expansion of such an undertaking is bound to invade Chinatown, ultimately driving out its present occupants.

From a political standpoint, changes in zoning by-laws tend to be beneficial to those elements in the community that wield influence and make decisions. In one sense, they relate to what is acceptable to the citizenry in general; in another, to what is acceptable to influential individuals and organized groups in the community; and in still another, to what is acceptable to the formal local governmental structure. All three elements may be in harmony or completely at odds with one another. However, where there is full harmony, it is tantamount to effective acceptance of a control measure; but where there is disagreement, the effective degree of acceptance is at the mercy of the dominant element in the community.

In spite of this, it must be conceded, however, that zoning can be used in many ways to promote socio-economic goals. At any rate, like many other public powers, it can be and sometimes is abused. The legal institutions have endorsed a broad concept of zoning as long as it involves reasonable regulations that protect or promote the public health, safety, welfare and convenience. Zoning ordinances tend to be relatively inflexible, and at times overly restrictive.[8] Some of the ways in which zoning by-laws can be restrictive are the following: restricting land area to uses for which they are definitely suited; creating small island districts that are more restricted than the properties around them; excluding uses that are incidental to permitted uses of the zoning plan; and promoting directly or indirectly unfair or discriminatory administrative practices. Zoning, as a legal device, has often been employed for selfish ends. That is, it has been put into practice with a view to enhancing the interests of a particular individual or group of individuals!

Furthermore, contractual obligations seem to play a very insignificant role in zoning plans. To be effective, zoning ordinances must be coercive to a certain extent, since they are a form of regulation for community welfare. Therefore, contracts between property owners or between a municipality and a property owner should not enter into enforcement of zoning regulations.

Again, enforcement of zoning ordinances should be justified by environmental concerns rather than by private restrictions.[9] There appears to be no necessary connection between zoning regulations and private restrictions, since one is based on coercion and the other on contract. Clearly, to accord legal justification, no mention of private restrictions should be made in a zoning ordinance. It must not be inferred here that zoning ordinances are necessarily hostile to private restrictions. The latter can, and usually do, make desirable requirements for development of land that zoning by-laws may not be able to effect.

It seems certain, however, that a number of communal organizations have tended to regard zoning as a negative or defensive measure, which they have utilized primarily to prevent undesirable developments. In spite of the shortcomings that seem to be inherent in the zoning process, more emphasis should be given in the future to zoning as a vital part of a larger, more positive and more dynamic plan for attaining better land-resource use.

Conclusion

Suffice it to say that although zoning is a powerful tool for land use control, it is by no means the only tool

available to the planner in the guidance of urban land use and development. Zoning in itself has not yet been applied successfully in designing an efficient circulation system in an urban society, nor has it alone succeeded in programming capital movements and resource allocation.

Furthermore, zoning as a device for land use control may not completely prevent new developments from displacing other desired uses. Changes in zoning ordinances which permit destruction of old historic buildings of all types, tend to destroy the character of a city. Moreover, where the vacancy rate in housing is at an extremely low level, every unit of housing torn down due to changes in zoning regulations has an impact on people in the neighbourhood thus affected.

Some local authorities, developers and members of the populace at large are still uncertain about the effectiveness of zoning as a regulatory device for urban land use control. This has brought to the fore certain questions regarding zoning regulations. For example, one is apt to ask: how much impact can zoning regulations have on the future development of the city? Are zoning regulations sufficiently influential in determining construction trends, design and the use of land in ways that serve the best interest of the population, both present and future? Is zoning the most flexible and the most efficient instrument for creating a desirable urban environment? What are some of the consequences and implications of an expanded use of zoning regulations? While the effects of some of the answers to these questions have been witnessed in most urban communities, others still remain to be seen.

Needless to say, for effective and viable results, changes in zoning by-laws must not only appeal to the developers. They should also, for social and political reasons, reflect the interests and immediate needs of the populace, who, due to oversight and lack of full consideration on the part of local authorities, are sometimes adversely affected by such changes. In other words, zoning regulations should not be considered as a panacea that can correct all economic, social and political problems. □

FOOTNOTES

[1] Ronald R. Renne, *Land Economics,* revised edition (New York: Harper & Brothers, 1958), p. 49.
[2] *Annual Real Estate Market Survey* (1972), p. 34.
[3] Noel P. Gist and Sylvia F. Fava, *Urban Society,* fifth edition (New York: Crowell Company, 1964), pp. 250-255.
[4] *Ibid.*, pp. 118-146.
[5] *Ibid.*, pp. 105, 202.
[6] *Ibid.*, pp. 155-175.
[7] *Ibid.*
[8] S. J. Makielski, Jr., *The Politics of Zoning* (New York & London: Columbia University Press, 1966), p. 92.
[9] *Ibid.*

REGIONAL DELEGATES for aspects

Eastern Ontario Assessment Area

1. Prescott & Russell-Stormont
   Dundas & Glengarry — Mr. H. Morris
2. Lanark-Leeds & Grenville — Mr. G. Grey
3. Ottawa-Carleton — Mr. H. Hafenbrack
4. Renfrew — Mr. H. R. Barkell
5. Frontenac-Lennox & Addington — Mr. K. Froats
6. Hastings-Prince Edward — Mr. J. A. Smith
7. Haliburton-Peterborough-Victoria — Mr. J. Guerin

Central Ontario Assessment Area

8. City of Toronto — Mr. L. Shimbart
9. North York — Mr. A. W. Wilson
10. Scarborough-East York — Mr. D. Struke
11. Etobicoke-York — Mr. J. Kirk
12. Ontario — Mr. Bill Robinson
13. York — To be nominated
14. Halton-Peel — Mrs. Barbara Trotter
15. Simcoe — Mr. M. Lumsden
16. Muskoka — Mr. R. McCann

Western Ontario Assessment Area

17. Niagara — J. Harriman
18. Wentworth — Mr. L. B. Charlton
19. Brant-Haldimand-Norfolk — Mr. J. Huff
20. Waterloo — Mr. C. Meadows
21. Dufferin-Wellington — Mr. I. Dunlop
22. Elgin-Middlesex-Oxford — R. Scott
23. Huron-Perth — Mr. L. Harloff
24. Bruce-Grey — Mr. R. Robertson
25. Kent-Lambton — Mr. A. Smith
26. Essex — Mr. J. Storey

Northern Assessment Area

27. Nipissing-Parry Sound — Mr. L. Warner
28. Cochrane-Timiskaming — Mr. A. Young
29. Manitoulin-Sudbury — Mr. I. McJannet
30. Algoma — Mr. F. St. Jules
31. Kenora-Rainy River-Thunder Bay — Mr. I. Zhiha

An overview of

Data management in property assessment

FRED L. JUNG
Real Property Appraiser
Office of the Assessor
San Mateo County, California

Fred L. Jung has been working as an appraiser with the San Mateo County Assessor's office since 1972. He is currently assisting in writing programs for a computer-assisted appraisal system for apartments. Prior to joining the Assessor's staff he worked for a major computer manufacturer. Mr. Jung has an M.A. in education. [Ed.]

Data management, in one form or another, has been in existence as long as governments and businesses have kept records. As with the proverbial chicken-egg question, it is difficult to ascertain if equipment changes led to changing concepts of data handling or if it was vice versa. Whichever way, the end result is greater production in less time.

The aim of this article is to follow the growth of data management in the San Mateo County Assessor's office in the post-World War II era as it changed to meet a growing population and ever-increasing legislative changes. At various points, we will touch on the data processing equipment, the concept changes, and their implications. For those organizations contemplating automation, perhaps San Mateo County's experience will suggest shortcuts or alternative paths.

EDP in general in the last 30 years

From the post-World War II era to the 1970's, electronic data processing changed dramatically. Although the punched card is still the primary input to the computer, also available today are key-to-tape or key-to-disc systems, optical readers, and magnetic ink character readers. These devices speed up the data going into the computer, so that the input will be available sooner.

Storage of data changed from that available in an 80 or 90-column card to a magnetic tape record, and to a random access disc or drum. It is faster to pass several feet of tape than it is to handle cards electromechanically. It is faster still to find the desired record by random access than to search many feet of tape in a sequential manner.

Vacuum tubes replaced electromechanical relays and were in turn replaced by transistors. Printed circuit boards measuring 5" x 7" were replaced by micro-circuitry on chips so small that microscopes are necessary in assembling them. These electronic components allowed several million instructions, rather than hundreds of thousands as before, to be executed in a second.

Programs of instructions changed from heavy panels covered with a spaghetti-like mass of wires to internally-stored programs that were capable of being altered much more easily and in less time.

The ramifications of all these changes are increased production, new and different reports that were not feasible before, the possibility of management by exception while the routine is handled by the computer, and new areas that are now possibilities for automation.

Implications for assessors

To the uninitiated assessor, the end result of electronic data processing might seem miraculous. As with so many human endeavors, it is not quite that way.

There is usually a logical point at which to enter automation. Most analysts would look for a highly visible clerical or accounting function that is being done manually. Applying computerization to the manual and repetitive tasks is a good starting point because the increase in production is dramatic and large savings can be realized, thus justifying the cost of automation.

By the late 1940's, with increasing numbers of people moving to California, San Mateo County was receiving its share of the new population, with a consequent rise in new home construction. In the San Mateo County Assessor's office, the automation effort began with changing the secured master record from manual methods to punched cards processed by tabulation equipment. The secured master is the source of information for the legal assessment roll, which is the public document showing all the property that will be collateral for the property taxes. By this means, the Assessor's office was able to maintain production, efficiency, and accuracy in coping with the greater volume of work.

In the 1950's, the Assessor's office used a master property record card, to be updated by an accounting machine. On this one card, the Assessor was able to print in one location all historical information pertaining to that property, including assessed values, sales , deed numbers, and buyers' names. A by-product of this updating by accounting machine was a paper tape which was used to update the secured master on magnetic tape.

Paralleling this, the in-house data processing staff wrote programs for the secured master to edit the data coming in, not only checking for its absence, but also testing for the correct type of data to be in the correct location. They also wrote programs to allow daily and monthly updates of the information and to control the batches of input. This further increased the accuracy of the data.

By the late 1960's, with the rapid increase in population in San Mateo County and new laws requiring assessment of property at 25% of market value, the automation of property reappraisal became more pressing. Supply and demand for residential housing were pushing the market values of homes up at a very fast rate. A time lapse of only three or four years between reappraisals of a home could lead to an unconscionable increase in assessment. The time was ripe for automating mass appraisal techniques.

Mass appraisal with help from EDP

Consultations were held with statisticians from the State Board of Equilization[1] on newer, more sophisticated statistical and mathematical models, like multiple linear regression analysis. From the data processing viewpoint, there were arguments both pro and con for having the new programs written either in-house or by an outside vendor. The in-house programmers were already working at full capacity. The outside vendors would be more likely to have mathematical specialists. A time limit on the vendors would be an incentive to produce. Maintenance and followup on the vendor's programs by the in-house group might be a problem unless liaison had been close during development and good documentation were available later. In order to save time, the decision was made to buy the service from General Electric's TEMPO, a Centre for Advanced Studies, for the development of a multiple linear regression system.

After further consultation with the State Board of Equalization statisticians and extensive examinations of assessment practices, the TEMPO systems analysts began writing computer programs. For input to this system, a new appraisal record card was designed. (See Exhibits A and B.) The transfer of data from the older land and building records to the new appraisal card, referred to as the "hard-card", was begun.

These computer programs were contained in a package with the acronym of REVEAL, for Real Estate Valuation. All of the programs were written in COBOL except the regression program, which was written in FORTRAN.[2] Before the regression program could be run to produce its formula, several other programs had to be run to set up the data. Among these were the cost update, sales analysis, and sales time adjust computer programs, for example. (See Exhibit C.)

A reappraisal cycle

The appraisal cycle begins by extracting the desired neighbourhoods from the master data file. The neighbourhoods are chosen because the ratio of appraised value to sale price is too low, or the dispersion too great. Two temporary files are created; one with all parcels of the selected neighbourhoods, the other with all the parcels of the selected neighbourhoods that had sold at least once during the specified "time slice". Eventually, the sales sample is used to predict the Estimated Selling Price (ESP) of all the parcels in that neighbourhood. (See Exhibit C for a list of steps, Exhibit D for a "picture" of the regression cycle.)

The next step is to update all the costs to be sure that the records of new parcels created since the annual update are up to the current level. Following the cost updating, all the sales are time-adjusted to the current date by another program to the same point in time for comparison purposes. From this new list of sales, an analysis can be made of sales to be dropped, such as unconfirmed sales, multiparcel sales, and invalid sales. Another output of the appraisal cycle is a "profile" of 106 property characteristics of which 88 may be used during the regression program. Examples of these variables are the area of first, second and third floors; finished and unfinished basement area; acreage or usable square feet of land; cost of appliances, etc.

Using the selected sales and variables, the step-wise regression program computes the first regression formula. Each step in the run is printed so that an observer can see when a variable was entered or deleted by the regression routine. At the end of the steps, the coefficients of the variables and the regression constant are printed.

A decision is made at this point to accept the regression formula or try again for another formula. The first formula produced by the regression program may be the best mathematically, but it may not be the best equation from an appraisal viewpoint. Some of the criteria used for acceptance are the reasonableness of the variables in the formula, the strength of the statistics, the number of variables in the formula, and acceptance of the formula by the appraisers working in that neighbourhood. If the decision is made to try for another formula, some of the questionable variables are suppressed by not allowing the formula to access them.

EXHIBIT A

Sample of Side 1 Unit Appraisal Record (UAR). Historical data to left; land data for machine storage to right.

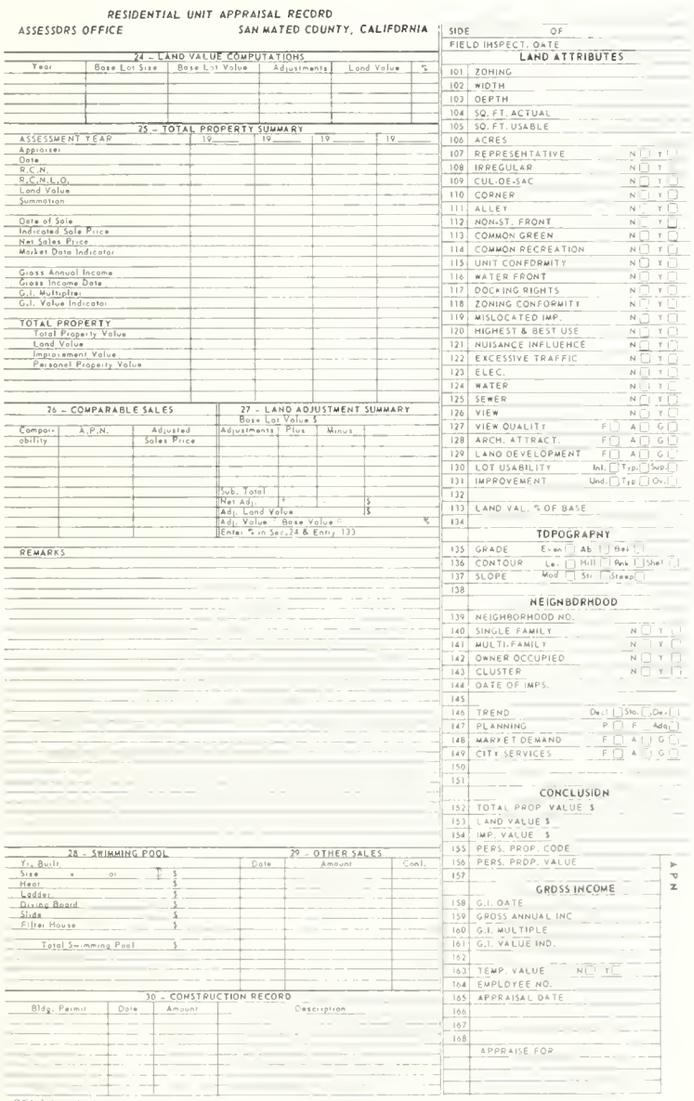


EXHIBIT B

Sample of Side 2, Unit Appraisal Record (UAR). Historical data to left; building data for machine storage to right.

A regression can be made with the shortened list of variables, taking less time because information from the first regression can be saved. Again, the program will choose the variables to include in the regression equation in order to compute a formula. The new formula will be analyzed and eventually, a satisfactory regression formula will be produced.

The next step produces an ESP "exception list" of those parcels having a new ESP (from regression analysis) which is greater than a given percentage over the old ESP. After analysis of this printed list the worksheets are printed.

The worksheets are the principal tools used by the field appraiser. For example, on the preprinted form are listed the parcel number and the building description with respect to number of floors, area of each floor, cost of building, cost of pools, if any, and cost less depreciation. Also listed is information about the land — its topography and usable area — and information about corners, cul-de-sacs, excess traffic and the like. Sales, if any, are printed in a special box.

Also printed on the worksheet are the last value (roll or otherwise) put in for the parcel, the ESP, and the summation value. If the appraiser feels that one of these is the best indicator of market value, he checks it. If he feels that another value is best, he writes it in, for later entry by the clerks.

The final step of a regression cycle (see Exhibit C) is recombination of the selected neighbourhoods' parcels with the full tape of all the county's residential parcels.

Melding old and new programs

Auxiliary to the package of programs written by the TEMPO group were old and new programs written in-house by the county data processing department's programmers. These had grown from card formats on punched card equipment to paper tape formats translatable to magnetic tape formats. The programs grew from these old bases to new combinations of programs.

Among the older programs was an edit to check for the presence of incoming data in certain required fields. Absence of data in these fields, or the wrong type of data, would be "fatal" to that record and it would be rejected with a printed error message. In other fields, data outside of certain limits might be valid, so only a warning message would be printed, to be checked by the appraiser.

Introduction of a key-to-disk unit with four data entry stations was a valuable new addition. This machine has several programs stored internally which control advancement to the correct location and which check to some extent the type and quantity of data in some fields. It also has a video screen where the operator can see the data being entered, giving a visual check, if necessary. Once the records are captured on the disk they can be copied onto a small reel of tape for delivery to the computer center and further processing. This "encoding" is a vital link between the unit appraisal record — the source document — and the magnetic tape records of the appraisal file.

Other programs allow the entry of new sales to be matched with existing parcel numbers; create new records; delete old records, and check totals of value fields to see if a batch is ready for acceptance.

EXHIBIT C

Chart of the steps in a regression cycle

Step

1. "Pull" neighbourhood, update costs, list sales, show histograms from Appraisal File.
2. Time adjust sales, profile of attributes.
3. Regression equation, leading to a formula.
4. If desired, select out variable(s) and rerun for another formula (this step may be repeated)!
5. ESP update.
6. Worksheets, proof list.
7. Recombine neighbourhoods with Appraisal File.

Need for standardization and documentation

Documentation is an important facet of all this processing. It makes for easier explanations of what is happening and may give a clue as to how and where a program went wrong. It makes writing the appraiser's manual easier, too, for maximum and minimum limits of all types.

The documentation is quite complete for the regression programs. The TEMPO group wrote a loose-leaf book describing each program twice. The first description is a synopsis giving an overall view of what the program does; the second is more detailed and has flow diagrams labeled with various entry points actually used in the program so that one can follow the logic. The next step in degree of detail would be the reading of the COBOL or FORTRAN instructions in the program itself, which should not be necessary.

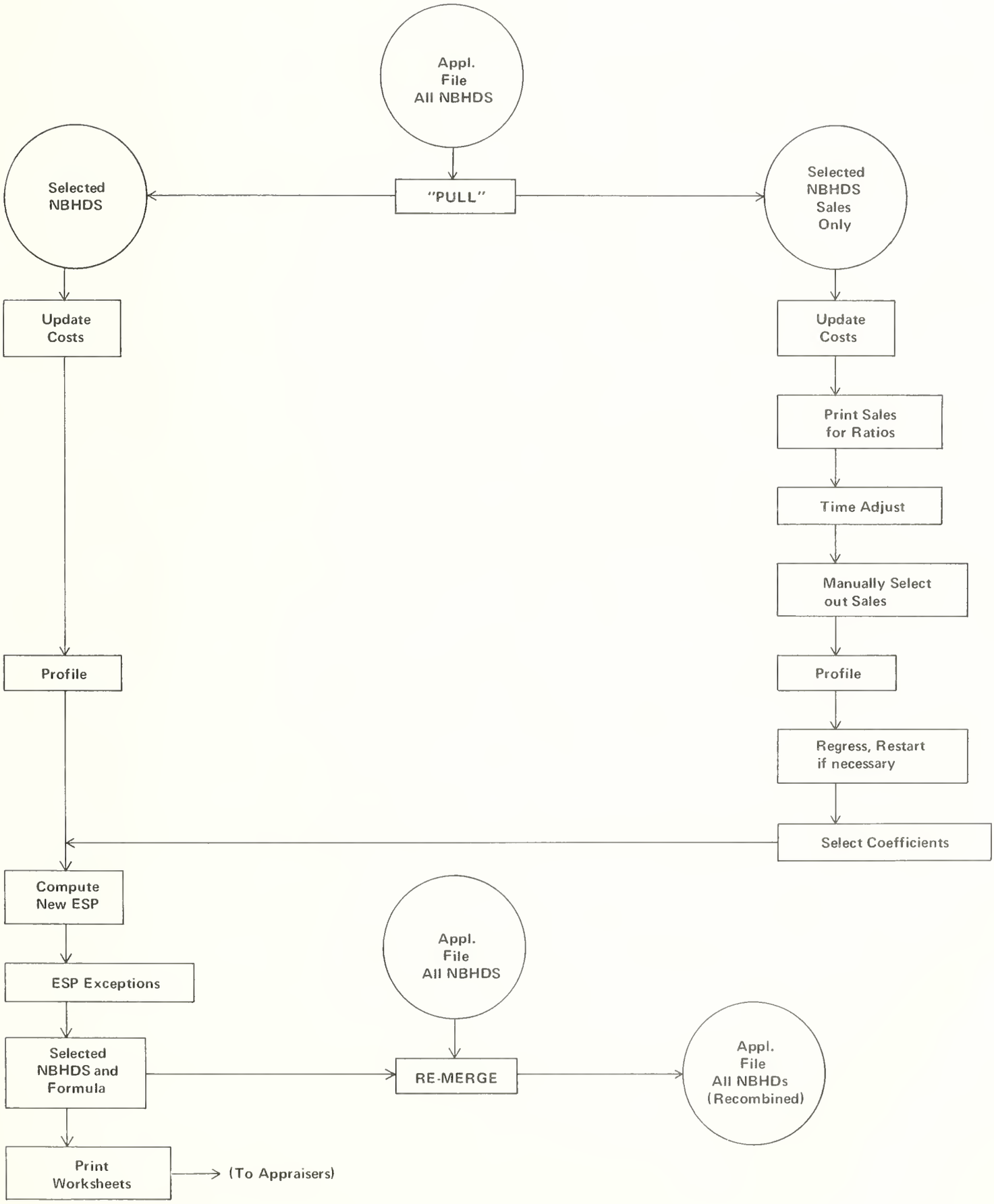
The appraiser's manual is an important part of the standardization process. Failure to define what belongs where in certain fields could lead to disasters in later data processing by the computer. An example, with respect to commercial zoning, is: Town A used CI; City B used C; City C used CI-1. Since they all referred to light commercial, the prefix CL was used, followed by the actual zoning. In a field allowing six characters but not specifying sequence, the county code could be written as CLC100 or CL00CI or 00CLC1 or 001CL, leaving the possibility of all four arrangements being encoded. One of these permutations might be handier for sorting than the others, but none would work well unless the arrangement were definitely specified.

Need for error management

> "It is absolutely impossible — and logically indefensible — to ask for a business computerization project to be perfect...So errors will occur in any computerized project. They occur because we cannot foresee everything and because we are not budgeted to foresee everything. . ."[3]

EXHIBIT D

A Schematic of the Reappraisal of a Neighborhood(s)



Managing two files (secured master file and appraisal file) where there is data common to both (e.g. land and building values) can be a problem. Discrepancies can occur within one file. This might happen if the data were incorrectly encoded from the source document, or if two digits were transposed in the manual processing, or if something were illegible. Discrepancies can also occur between two files. This might happen if there were two source documents, one for each file. It might happen if certain calculations were made in one file but not the other.

To control these problems, which must be expected to occur, it might be necessary to compare the important fields from each file after the property key numbers have been compared and matched. This could be done either annually or on demand. Special programs might be necessary to print out the contents of certain fields for comparison with other source documents. Almost always in production programs, standard error messages would be printed for certain kinds of bad data. Sometimes logical errors appear only when some special, unanticipated circumstances occur. A certain amount of time must be budgeted in any computerization program to trace, interpret, and solve errors.

Future implications

During mid-1972, the master property record card, with its historical data for each property, was superseded by the use of microfiche. Data from the secured master file was rearranged electronically and photographed in reduced form. Information on more than 180,000 parcels was reduced and put on sheet film, making a "deck" of film measuring four inches by six inches and with a 5/8-inch thickness. Each month a new, updated microfiche is produced. There are implications for the future applications of microfiche.

It would no longer be necessary to carry the one permanent record, the unit appraisal record (Exhibits A and B) to the field, thus denying its use to others at the office. Several copies of the set of appraisal file microfiche could be made, some to be used with portable viewers in the field, others to be used at various locations in the office. Viewers could produce a paper copy of portions of the fiche.

The use of microfiche might lead to the retirement of the unit appraisal record by the production of newer, updated versions every month as additions and alterations were made to the buildings. This would reduce paper records of all sorts. Possibly the type of data on these appraisal records on microfiche would lead to data sharing by other governmental agencies.

Also, it is anticipated that the statistical methods now used on the single-family residential system will soon be used on apartments, commercial, and industrial properties. This will require new computer programs but most of them will be very similar to those already written. □

FOOTNOTES

[1] San Mateo County appreciates the help and advice it has received from Robert H. Gustafson and other members of the State Board of Equalization.

[2] COBOL is an acronym for COmmon Business Oriented Language. FORTRAN is an acronym for FORmula TRANslation. COBOL is a set of computer instructions that read somewhat like English language statements rather than "computerese". COBOL has computing capability and had, as one of its design specifications, the ability to handle records and fields within records with ease. FORTRAN was designed primarily for computing, so it is more appropriate than COBOL for mathematical routines.

[3] "Can Five Points in Four Hours Start Error Control?" The Taylor Report, Alan Taylor, CDP, Computerworld 10/23/74.

Liability to Assessment – Tenant-Occupied Crown Lands

Crown lands are normally exempt from taxation. These exemptions are guaranteed under Section 125 of the British North America Act and Section 3 of The Assessment Act. There are, however, many incidences where private corporations or individuals occupy crown land for the purposes of profit or personal enjoyment. It is only equitable that persons in this position should shoulder their fair portion of the real property tax, and for this purpose Section 26 of The Assessment Act provides:

26(1) Notwithstanding paragraph 1 of section 3, the tenant of land owned by the Crown where rent or any valuable consideration is paid in respect of such land and the owner of land in which the Crown has an interest and the tenant of such land where rent or any valuable consideration is paid in respect of such land shall be assessed in respect of the land in the same way as if the land was owned or the interest of the Crown was held by any other person.

Recreational or cottage properties present little problem in that this type of property requires a lease, and the tenant has similar rights to those who enter into agreements with private landlords. Most businesses on crown lands are assessable and taxable; however, there are instances where difficulties have arisen. The main questions seem to arise over the control over the occupancy of the land and profits. Two cases will suffice to illustrate the problems involved.

The questions in *Delta Parking Systems Ltd. and the Township of Toronto,* O.R. 1965, 1 380 centered around whether or not the business (Delta Parking), which operated a parking service at Toronto International Airport and received a management fee for its services, was liable to the property tax under S. 26, and secondly, whether it was carrying on its own business within the context of The Assessment Act and therefore liable to business tax.

The argument put forth by Delta was that the company had been appointed by the Crown to manage and operate the parking structure. The Crown provided certain parking equipment and the applicant provided all labour, certain equipment, supplies and other services. In return for this the Crown paid a fixed sum to Delta to cover the expenses incurred plus a stipulated management fee. The Crown retained the right to increase or decrease the schedule of parking fees. All monies received by way of parking fees were to be deposited daily by Delta to the account of the Receiver General. In addition to these strict stipulations, the services of Delta were under and subject to the control and supervision of the airport manager.

The Court held that the parking company was under the full control of the Crown and as such did not occupy the premises. The applicant was therefore not a tenant of Crown lands and, as a consequence, not subject to the real property tax under S. 26. As regards to the business tax it was found that Delta was not carrying on a business but was rather performing as an agent or servant of the Crown and therefore not liable to business assessment.

A similar case but with important differences is *Lorne Murphy Foods Ltd. and John A. Mowat, Regional Assessment Commissioner, Region #3,* O.R. 1972, 1 559. The appellant is a catering firm which operates canteens in specific federal buildings. In light of the Delta Parking decision, the appellant held that the controls imposed on it by the government were so strict that it was no more than an agent of the government and operated under its direction. Under the terms of the agreement, the caterers were allowed a profit of up to 5% of gross sales for any one year.

The Assessment Commissioner maintained that although controls were strict, the catering firm was, in fact, a tenant of the government and therefore liable to business assessment.

The Justices concurred with the Assessment Commissioner. Murphy Foods Limited was not an agent of the Crown but was in fact subject to Section 7(1) of The Assessment Act (R.S.O. 1970). It was clearly a business which was conducted for profit. Although the catering company was under stringent management and merchandising controls exercisable by government authorities, those controls were directed to the manner of conducting the business rather than to the nature and degree of the use and occupation of the premises. The company was ruled liable to business assessment.

As we can see, there can be a fine line between what constitutes an agency of the Crown as opposed to a tenant of the Crown. Questions of this nature often must be answered by the courts. □

Ontario shares its Valuation File

Provincial and territorial directors of assessment across the nation gathered in Toronto on January 21st this year for a three-day meeting to preview Ontario's Valuation File, a computer-based assessment system. The meeting, which was generally considered the first of its kind, made significant inroads in promoting closer inter-provincial exchanges of assessment technology.

Among those welcomed by Mr. P. G. Gillis, Executive Director of Ontario Assessment Division, were: Mr. Rene Gagne of Alberta, Mr. W.H. Snowdon of British Columbia, Mr. J. Reimer of Manitoba, Mr. E.A. Cronk of New Brunswick, Mr. Robert A. Joudrey of Nova Scotia, Mr. C. M. Davis of Prince Edward Island, Mr. Robert Fournier of Quebec, Messrs. W. A. Ewert and H. E. Gullett of Saskatchewan, Mr. M. S. Smith of Northwest Territories and Mr. J. W. Chaney of Yukon.

The preview was offered in six computer-aided demonstrations. The first of these was addressed to illustrate a sorting technique which has been developed for the selection of comparable properties. Three applications of this comparable select program were shown on on-line terminals:

–listing of properties by block, sale price, sale date, style;

–listing of comparable properties by block, sale price, age, assessment, number of bedrooms;

–listing of comparable properties by sale price, assessment, floor area, building age, number of bedrooms.

A "valuation model" which has been developed to estimate the market value of residential properties in the City of Oshawa was offered to illustrate the comparative sales method to value. This statistically derived model generates "base" value estimates for several property groups and, in use, yields market value estimates after adjustments are made for certain physical property characteristics.

The third part of the preview program was devoted to the Valuation Review Sheet which correlates the roll number, property address, value estimates, sale price, sale date, floor area, year built, style, class, presence or absence of garage and type, and the number of bedrooms. Aside from other more sophisticated potential uses, the VRS promises to provide the assessor with a potent tool to standardize his value estimates at a glance.

The following part of the preview dwelt on the File's built-in quality control features. To begin with, it is programmed to generate regular assessment/sale ratio reports which are both in list and histogram forms. Within this, the File will respond to commands to list suspect ratios by class. Finally, the File will produce quality control reports as part of its ultimate MIS objective.

The fifth demonstration illustrated the File's ability to compare value estimates between 1971 and 1972, and on the basis of observed differences, assists the assessor in generating an appropriate update factor.

The preview was concluded with two demonstrations of the File's analytical capability. One of these was the File's ability to produce scatter diagrams such as plotting building residential against RCN. Beyond scatter grams, the File will also respond to commands to cross-tabulate selected data elements such as generating local modifier ratios for analysis.

The preview was organized by Mr. A. N. Mackay, Director of Assessment Standards Branch.

△ Who's who in Canadian assessment?

Back row (left to right): H. E. Gullett (Sask.), J. W. Chaney (Yukon), W. H. Snowdon (Van. B.C.), R. A. Joudrey (N.S.), R. Gagne (Alta.), R. Fournier (P.Q.).

Front row (left to right): M. S. Smith (N.W.T.), P. G. Gillis (Ont.), C. M. Davies (P.E.I.), J. Reimer (Man.), E. A. Cronk (N.B.), W. A. Ewert (Sask.).

THE BACKGROUND TO ASSESSMENT REFORM

The following is a reprint of a speech presented by Mr. Purdon at a workshop on site value taxation on October 26, 1974. The workshop was part of the Institute of Municipal Assessors' annual conference in Toronto. [Ed.]

JOHN S. PURDON
Assessment Standards Branch

Introduction

When I was asked to sit on this panel, I was requested to provide some insight into the policy decision made in 1968 to adopt market value assessment and why the Ontario Government rejected other alternatives. I should therefore like to address my remarks to the topic, "The Background to Assessment Reform."

We have all heard of the Smith Report, and some of us have even read parts of it. The Smith Committee said many things, but in terms of my topic, three points must be singled out:

1. The Smith Report noted that for a variety of reasons, local and municipal expenditures had risen and would go on rising, and that provincial grants to local authorities would increase. Indeed, provincial support to municipalities today amounts to over 50 per cent of municipal expenditures, and school support amounts to close to 65 per cent.

2. The Report commented at some length on the state of local assessment and noted that it was being poorly administered. It was found that 64 per cent of municipalities had made no significant adjustment in values since 1956. In a comparison of 1956 values, the report showed that only fourteen municipalities out of some 900 (1.5 per cent) were showing assessed values on their rolls at over 50 per cent of market value. Most serious of all was the discovery that properties were being left off the roll, some properties were being undervalued, and different classes of property were being assessed at different proportions of market value within one municipality.

3. Finally, the third point noted in the Report was that on the one hand, municipalities needed more cash and the province was having to bail them out, and on the other hand, the tax base was in such a mess that municipalities were not able to take full advantage of the opportunities they had to raise cash themselves. And yet it was this very same tax base which was used to share out the provincial grants.

The options for reform

This situation was clearly intolerable, and following the report there was a period of analysis and discussion of what policy the then Assessment Branch should adopt to solve the problem.

The major issues were:

I. Administration

Could the problem of the tax base identified by the Smith Report be solved using the existing machinery of advice and assistance from the Department of Municipal Affairs, or should some more radical policy be proposed; and if so, what policy should this be? Put very simply, who should run the assessment programme?

II. Valuation

Was the problem solely administrative, or was it a case not so much of a good system badly run, but of an inherently bad or unsuitable system? Put very simply, what system of valuation do we use?

The first question was answered when the Government decided to take over the assessment function.

The second question then remained. From a survey of assessment systems in use in the world, the following emerged as the alternatives:

1. Assessment of property using an annual rental value, i.e. the British system.
2. Assessment of real property using capital value but assessing land at a different proportion from improvements, i.e. Site Value and its derivatives.
3. Composite property assessment, using some objective value criterion such as market value.
4. Abolition of real property assessment and its replacement by some other revenue source, such as an income tax.

Evaluation of the options

Time does not permit the discussion of all these alternatives, except to say that the British system was ruled out as being unsuitable to the Ontario situation; and while the abolition of the property tax was an attractive option to certain academic economists, on a practical level it was not deemed feasible to raise an extra $2 billion from an income tax. This left the present system or site taxation.

These systems were then carefully examined using the following criteria: administration, equity and tax effort.

Administration

Of the three criteria, the first two of administration and equity are difficult to separate. This is so because they often represent a trade-off. One can get more of one and less of the other or vice versa. In a way, that was what the Smith Committee was complaining about. Prior to 1970, in exchange for relative administrative simplicity and high administrative savings, the result was a low level of equity.

An examination of how site value taxation was administered around the world showed several systems. At one extreme, five or six classes of land were defined and all land placed into one of them. This was extremely easy to administer but had limitations from an equity point of view. At the other extreme, in South Africa, very sophisticated methods of land valuation were used. The South Africans were very enthusiastic about their system, which they claimed had clear administrative advantages because it was unnecessary to assess buildings; and buildings caused all the problems. They used a development approach and asked themselves what value a developer would place upon a piece of land. The answer to this question was based on feasibility studies of capitalized anticipated income of a potential development, less development costs. Local adjustment factors were also prepared to reflect local conditions. The result produced a value for that plot of land which was then used as a benchmark, and the value was applied to all other similar land. In this system, the South Africans were considerably assisted by the fact that all lots are of a standard size, the only difference being the number of standard lots one used.

In a comparison between the South African system and the alternative of market value, it did not seem to the Assessment Branch that there was much advantage to be gained by change. Admittedly, one does not value the buildings on a site value system, but there was the potentially equally, or possibly more, difficult task of assessing the capitalized income stream for a building which did not exist at all!

This issue aside, however, there was an additional administrative factor. This was that the Assessment Branch knew the government was committed to taking over the assessment function from the existing two hundred or so local assessment authorities. This meant very considerable problems of setting up an organization to get on with the job. On the asset side, the Branch would inherit some 1,800 trained and experienced assessors who knew the system and who knew what they were doing with that system. To adopt site value taxation, even of a very simple type, meant abandoning that asset almost completely and creating a liability in terms of training and experience. Frankly, the advantages to be derived from instituting a new system did not seem worthwhile.

So from this viewpoint, it seemed that there were problems enough without adding to them. Market value seemed the best alternative in terms of administration.

Equity

Turning now to equity, we come to an issue which is difficult in the extreme to define. The Smith Report had said that like properties should be assessed and taxed in a like manner. To this one must add some qualifications about areas or regions, since Algoma is not Toronto.

Equity in site value taxation does, however, have a somewhat precise definition. Whoever originated the idea of site taxation, Henry George was its great disciple; and he was concerned about monopoly profits being obtained from the accident of ownership of a particular piece of land. George's concern was all the greater because he saw that much of the extra monopoly value was socially created. The city builds a highway and immediately the value of my 100 acres goes up ten times because access has improved. So to apply site taxation equitably, we have to determine two values –

1. the actual productive value of the land, excluding any monopoly price or any socially-created value, and
2. the actual market value of the land (which would theoretically include the monopoly or socially-created value), and then tax away the difference between the two.

The problem is that (2) is difficult to measure and (1) is impossible! The value of (2) is the potential value of the land according to its highest and best use, as is done in the South African system. The value of (1) implies the application of some basic philosophic "value in production".

The concept of value in production made sense in 1790 when David Ricardo (from whom Karl Marx learned his economics) defined the value of land in terms of its basic productivity for grain food production. But what yardstick do we use now? So if we are not using site value taxation to tax away the monopoly profits of land ownership above its productive ability, what are we taxing? I do not know, and I have not met a proponent of site taxation who does.

Property taxation does not get involved in such moral and philosophical conundrums. Property taxation merely says that property equals wealth and the greater the wealth, the greater the tax. For site value taxation to be a better concept in 1967, and possibly since, it must prove that it measures wealth better than the property tax. The question is, does it?

First, if we could apply the true Henry George principle of taxing the surplus, or monopoly profits, then site value taxation is not concerned with wealth, only surplus or monopoly profit. If, on the other hand, we adopt the South African approach, we only value the highest and best use. This would result in placing a value on the Toronto-Dominion Centre equal to the shoe store next door. It is doubtful if the Smith Committee would consider this to be an advantage in terms of improving the ability of Toronto to raise the revenue it needs. In neither case would the

system be of much use for the purpose of distributing grants from the Province to the local authorities.

I return to this issue of grant apportionment again, since it is a key issue, and one which the Assessment Branch together with Treasury felt was not understood by advocates of site value taxation in proposing their system. Even assuming that the most lavish claims made by site value taxation supporters are valid, their criteria are solely concerned with taxation, together with certain planning and land use issues. But the local tax base is becoming more important as a vehicle for grant apportionment than for raising taxes, and this trend will continue. As I indicated earlier, on the average, fifty cents of every dollar spent by local authorities on municipal expenditures come from the Province, and in education it is as high as sixty-five cents.

Thus, from an equity viewpoint, it was decided that the equity principles of site value taxation, while highly laudable, were impossible to achieve, and as such this blunted much of the argument in favour of site value taxation. More importantly, it was felt that since the property tax base was being increasingly used for the apportionment of grants to local authorities, as well as between members of an apportionment region, the equity principle of the existing property tax based on market value was more suitable than the site value.

Tax effort

This issue refers to the ultimate objective of any tax system: its ability to raise revenues. At the time that the question was under discussion in the Department of Municipal Affairs, both the Municipal Finance Branch of Municipal Affairs and the then Department of Treasury and Economics took part. Also included in the definition of tax effort was the issue of the use of the municipal tax base as a means of apportioning grants and local taxes within apportioning regions, to which I have just referred.

The issue of most concern to both the Finance Branch and Treasury, however, was the question of broadening or narrowing the tax base. One of the chief problems with the property tax in general is its tendency to be insensitive to changes in the level of general economic activity. This is due largely to the fact that there is an inevitable lag between a change in the value of a piece of real property and its reassessment. Even at best, this lag would be twelve months, and a more realistic estimate would be two to three years. To support any change in the system, the Treasury people had to be convinced that the new system would improve the ability of that system to adjust to economic change. The feeling was, first, that since much of the lag was administrative, no improvement would be likely. Secondly, it was felt that the possible impact of the system might be to make the municipal tax less sensitive to economic change, rather than more so. Certainly, one of the advantages claimed for site value taxation was that it would reduce speculation, and hence speculative price changes. Yet in terms of increased tax effort at times of rising prices, it was felt that this might not be altogether a good thing.

Unfortunately, none of these issues were clear then, nor are they now. With the possible exception of Sydney, New South Wales, site value taxation has not been adopted in an industrial urbanized society similar to Ontario. Examination of the Australian experience is interesting, however. They have site value taxation, and yet property and land speculation still exist. Proponents of site value taxation often argue that slums will disappear, and yet rundown urban property still exists in Sydney. Market value assessment is criticized because it discourages people from fixing up their homes, and yet peeling paint, broken windows and dilapidated houses are not unknown in Australia.

To take the South African case, we must remember that while that country shares some of our cultural heritage, it is a two-class society of poor blacks and rich whites. While the South African system does an excellent job of valuing land at its highest and best potential use, this is also done in the context of what we might consider to be an overly rigid system of zoning bylaws — as indeed it must.

In the final analysis, while no one could deny the enthusiasm of the Australians and the South Africans for their system, it appeared to the Assessment and Treasury personnel that the advantages claimed for the system came more from the fact that it was excellently administered than that the system was inherently superior. Thus the evidence to support a change was not convincing, and it was felt that it would be better to improve the system we had than to venture into unknown territory on the evidence that was available.

The impetus for change

Finally, having discussed the history of why the government adopted the policy it did, I would like to attempt to bring my remarks into the present by commenting on why, in my opinion, the issue of site value taxation emerges as it does from time to time.

First, the conditions referred to by the Smith Report in 1967 are still in existence today. Much has been done in the interim to make the present property tax base more equitable, such as the Farm Property Tax Rebate Programme and the whole GAINS programme; but the basic issues still remain. So the critics of the local property tax base still have a good deal to work with. What we, as assessors, must remember to point out is that we are in the process of reforming the tax base and that some (though unquestionably not all) of the faults of the present system will be removed in 1976/77. A good example of this is vacant land assessment. Some vacant land is currently under-assessed. The Smith Report said so, and nobody would disagree. But before saying that market value taxation is no good and that we should adopt site value taxation, we must wait and see what market value taxation will do with vacant land. I think if you examine the reassessed properties in Muskoka and Bruce-Grey, you will find that vacant land is no longer under-assessed.

Secondly, in the press articles which appear from time to time on site value taxation, a frequent theme is the serious problems faced by local governments in funding their services. I agree they do have fiscal problems — everyone does except millionaires, and even some millionaires occasionally have cause for thought. But I get the distinct feeling that the viewpoint of the press is heavily coloured by the situation south of the border. Whatever difficulties we may have in Ontario and across Canada in local government finance, they are very different from those in the United States. The problems are different partly because, due to different social and, in particular, political conditions, we can apply solutions which they cannot. Thus, we know that Detroit has a decayed central core, but we can point to no similar case in Ontario. Moreover, Detroit does not have a metropolitan regional government like Toronto, and Michigan does not have a statewide reassessment programme, a system of comprehensive grants to support local services, nor a property tax rebate system. It was precisely these

types of problems which prompted the Ontario Government to take the active role it did in local fiscal support and to develop programmes to deal with them. Fortunately for Ontario, we have a constitution which makes such action possible. The British North America Act is not all bad!

Thirdly, we live in times of rapid change. This produces uncertainty. The problems which surround us, such as speculation, inflation and urban decline, are difficult to solve. Site value taxation appears to be a solution to some and perhaps even to all these problems. I believe that as a solution, it is more apparent than real. I believe that speculation — or the entrepreneurial risk taken by some individuals to buy land cheaply, consolidate it into large parcels, and then develop it — is not bad but good, provided the rate of profit is not excessive and the objectives of that development meet with society's approval. I believe the best way of keeping the baby (the development) and only throwing away the bath water (excessive profits and anti-social development) is by income and profits taxes and by planning by-laws and *not* by rather utopian property tax laws.

Conclusion

So to sum up, when the question as to what local assessment practices should be instituted was considered, market value assessment seemed in the end to offer the most hope of achieving the fundamental goals of the reformers, namely:

1. an easily administered assessment system that could respond to changing conditions in Ontario in the coming decades;
2. an equitable tax base;
3. a tax base which provides an adequate basis for apportioning taxes and grants; and
4. a tax levy which would reflect changes in economic conditions.

Site value taxation, on the other hand, did not seem to offer acceptable standards of equity, and it would be more difficult to administer. The resultant tax base could not be used for apportionment, and the ultimate impact on tax levies was unclear. Thus, in the end, market value was the direction chosen for property assessment and taxation in Ontario. □

Proposals for assessment reform in Nova Scotia

Mr. Cameron is currently Director of Research for the Nova Scotia Department of Municipal Affairs. A graduate of Dalhousie University in Economics and Law, he has written articles on university finance and municipal government. He was a research associate with the Graham Commission, specializing in provincial and municipal finance, including assessment. [Ed.]

JOHN R. CAMERON
Director of Research
Department of Municipal Affairs
Halifax, Nova Scotia

The Report of the Nova Scotia Royal Commission on Education, Public Services and Provincial-Municipal Relations represents the results of one of the most extensive investigations of municipal government ever undertaken in Canada.

Referred to as the Graham Report, after the Chairman of the Commission, Dr. John F. Graham, a Dalhousie University economist, the Commission's Report contains nearly 7,000 pages and over 1,400 recommendations.

The Commission recommends generally that the provincial government should assume all of the present municipal responsibilities for education, health, welfare, housing, and the administration of justice. It recommends a municipal structure of eleven geographically extensive one-tier municipal governments to replace Nova Scotia's present 65 cities, towns and rural municipalities. The provincial government would also perform the assessment, tax billing and collection, borrowing and pensions administration functions for these municipalities.

The Report recommends, as the most important addition to provincial revenues to pay for its other recommendations, provincial taxation of all property other than residential property. Essentially this tax would apply to commercial and industrial property. The Report recommends that the rate be uniform across the province, at $4.00 per $100 of assessed value, with a special $2.00 rate for farms, forestlands, and property used as the base for commercial fishing.

The reasoning behind the Report's recommendations concerning the form of provincial property tax recommended is illuminating:

> . . . Rather than have the province tax all property, so that the province and the municipalities share the same tax base, we considered it preferable to divide the property tax base into residential and non-residential . . . Municipal autonomy is better protected, since the municipalities would have full control of the tax on an

The Graham Report recommends, among others, that the provincial government should perform the assessment, tax billing and collection, function for municipalities. . .it favours splitting provincial-municipal tax bases. . .and a uniform commercial-industrial tax rate. . .

> identifiably separate tax base, rather than having to share their tax base with the province . . .
>
> A significant proportion of taxes on non-residential property is paid by persons not resident in a municipality, through the prices paid for goods sold by industries and commercial establishments . . .it is therefore appropriate that the province use the revenues from the taxation of non-residential property . . .to finance general provincial services . . .
>
> Provincial taxation of business ensures that municipalities will make decisions about industrial location and commercial development unbiased by considerations of the taxation revenues to be gained. One of the principal advantages of a uniform tax on commercial and industrial property is its neutrality. Business would be free to locate in its most economically advantageous location rather than being influenced by the capricious effect of differences in property tax burdens among municipalities. A further benefit would be the stability of the tax rate, which is a typical feature of provincial property taxes.[1]

The Report recommends the elimination of property tax concessions to industry, residential and business occupancy taxes, the deed transfer tax, and personal property taxes. The sales information provided at present by the deed transfer tax would be provided by mandatory affidavits of purchase price.

The Commission also proposes a new definition of assessable property. A new definition appeared to be necessary in order to precisely define the tax base, given that the Commission recommends the elimination of personal property taxes. If this recommendation were to be adopted, it would no longer be true that all property, both real and personal, would be taxed, and the problem of defining the line between real and personal property would arise.

The Commission recommends that assessable property should include real property with some extensions: mobile homes or trailers used for residential or commercial purposes, and rafts, floats, houseboats, boats used as a residence, docks and any other device anchored or secured to assessable property. Only machinery and equipment that is affixed to a building and services it, that "would, without special mention, be transferred by a conveyance of the land," would be assessable. The Commission also recommends that any structure affixed in some way to land should be assessable. The exclusions from the definition cover such subjects as public rights-of-way, including highways; minerals; personal property; and crops.

Having come to a definition of assessable property, the Commission turned its attention to the problem of defining assessment value. The problem was adopting a new definition of assessment value to replace s. 38 of the present Assessment Act, which reads:

> All property shall be assessed at its actual cash value, such value being the amount which in the opinion of the assessor it would realize in cash if offered at auction after reasonable notice, but in forming his opinion the assessor shall have regard to the assessment of other properties in the town or municipality so as to ensure that taxation shall fall in a uniform manner upon all real property in the town or municipality.

This has been pretty clearly interpreted by the courts to mean market value, providing only that the uniformity criterion is dominant.[2]

The recommended definition retains the primacy of the uniformity criterion, with only the changes in wording required to provide for province-wide uniformity. The term "assessment value" replaces "actual cash value," but is defined to mean market value unless there is insufficient market value data available, in which case economic value (capitalized rental value) or depreciated replacement value are permitted. The intent is to preclude the courts coming to an unreasonable result where the market is thin or, practically speaking, non-existent.

Special assessment provisions are recommended for farms and fishing properties. Essentially, the Report recommends a dual assessment system, based on a market value assessment and a value-in-use assessment. This latter assessment would be based on a restricted market for the property, in which it would be considered to be sold only for the use to which it is presently being put. Taxation would apply to the value-in-use assessment. When the use of the land is changed, the owner making the change becomes responsible for the difference between the value-in-use and the market value taxes for the previous ten years. The Report provides that tax bills should include a running total of the potential tax liability should the use of the land be changed, and that this potential liability should also be recorded on the tax certificate granted at the time of sale.

No value-in-use protection is recommended for forest properties. If forestry is the highest value use of the land, the Commission recommends that the assessment value be based on the capitalized current stumpage value of the sustained yield maximum annual cut. The Commission recognized the probable difficulties of such an approach, but considered that with special training, assistance from foresters and a degree of self-assessment, acceptably accurate assessments could be achieved reasonably easily.

The Commission also recommends taxation of construction completed during a year and partial remission of taxes with respect to property destroyed or substantially altered in value during a year.

The Report comments that "Nova Scotia is fortunate to enjoy the high level of assessment quality prevailing in the province, but there is still considerable room for improvement."[3]

> Our principal recommendation concerning assessment is that the province should assume the full cost of, and administrative responsibility for, property assessment. Regional assessment has in fact left very little autonomy at the local level. Assessment practices are set out in the

statute and the Minister must approve hirings and dismissals of assessors. Our recommendations for the improvement of assessing practices would lead to even more provincial control. Retention of the regional assessment committees would give no more than an appearance of autonomy at a fairly substantial cost to the municipalities. Most important, provincial assessment will ensure province-wide uniformity on an individual as well as on a municipal unit basis. Moreover, the proposed provincial tax on non-residential property would virtually make it necessary, in any case, for the provincial government to assume responsibility for assessment of this property to ensure that it was assessed on a uniform basis throughout the province.[4]

In order to implement its principal recommendation, the Commission recommended the establishment of a Provincial Assessment Service, independent of the Department of Municipal Affairs but reporting to that Minister. The Service would operate from eleven regional offices, one in each of the proposed counties, though the Report indicates that it may prove to be appropriate to combine offices in some areas. At present, there are 15 assessment jurisdictions in the province.

Of equal significance is the Report's recommendation that the whole province be reassessed at full market value in the same year. Reassessments of the whole province would then be carried out every three years. If the provincial government were to adopt this recommendation by, say, the end of 1975, the goal could probably be achieved for taxation in 1977.

Generally speaking, the Report found the quality of assessment in Nova Scotia to be quite high, particularly in the urban areas. Assessment-to-sales ratio studies indicated that there was an acceptable coefficient of dispersion (less than 15) in most of the towns surveyed, and in the two largest cities the coefficient was good (less than 10).

In most of the rural areas the coefficients of dispersion were considerably higher. The Report considers this the natural outcome of a greater variation in property types, relatively little sales information and the erratically high prices being paid for waterfront and other recreational properties in rural areas.

Nevertheless, the Report contains a number of recommendations designed to further upgrade the quality of assessment. These include the preparation of a provincial assessment manual; further emphasis on drafting and using property maps; continuous review and updating of the assessors' training programme, with emphasis on appraisal; annual, published assessment-to-sales ratio studies; computerization of assessment records; and the employment of assessors with special training to assess properties that present difficult valuation problems.

To improve assessors' qualifications, the Report recommends up-dating and revision of the correspondence course, with special emphasis on appraisal training. To some extent this recommendation has been implemented in advance by recent revisions to the course. The Report also recommends an independent review of the course periodically to prevent it from becoming too ingrown, and to take advantage of the fresh perspective an outsider is likely to have.

In the matter of quality control, the Report recommends that stratified assessment-to-sales ratio studies should be conducted for every municipality and then published.

Closely related to the quality of assessment are an assessor's sources of information. The Report recommends:

(1) purchasers of real property should be required to file an affidavit of purchase price as a condition of registration of the transaction;

(2) the provincial director of assessment should prepare an assessment manual for the guidance of assessors; and

(3) priority should be given to assessment mapping.

Again the Report has been anticipated to an extent, in this case by recent special grants to encourage assessment mapping.

The Report recommends the continuation of revaluation for the intervals between reassessments. The main reason is to provide a basis for the recommended equalization grants that changes gradually, not suddenly every three years. The Report suggests that revaluation will also serve as a useful check on the accuracy of past assessments and provide valuable data for the next assessment. It would be conducted by the assessment service, not by a separately constituted revaluation commission as is done at present. The Report also makes recommendations concerning a new appeal procedure for revaluation assessments (which is unlikely to be often used), the information content of the revaluation report, and the timing of publication of the revaluation report.

The Commission recommends the retention of specialist assessors to assist in valuing properties that present difficult valuation problems. Probably the most difficult properties to value are industrial, but there are several other types of property that are of infrequent occurrence within a region but are sufficiently frequent in the province to justify a specialist. The specialist assessor would also help to achieve the primary goal of uniformity.

Most of the Graham Commission's recommendations concerning assessment appeals are of a fairly technical nature governing such matters as time limits, grounds of an appeal, and standing in court. The Report provides for a provincial assessment appeal court system with uniform procedures administering a uniform Act.

More significant is the provision that an assessor should be required to explain his assessment first in any appeal, but the onus would not amount to having to put up a *prima facie* case. This is in effect putting into legislation a common practice. Secondly, to reduce the number of nuisance appeals, an appeal should be allowed only if it results in a change that is more than the lesser of $1,000 and 10 per cent of the original assessment.

The provincial government has taken no position on the Report and is in the process of studying its recommendations with an eye to both desirability and practicality. Assessors in Nova Scotia are awaiting the outcome of this study and evaluation process with interest.[5] □

FOOTNOTES

[1] *Report* of the Nova Scotia Royal Commission on Education, Public Services and Provincial-Municipal Relations, Volume I, p. 125 (pp. I-23-8 and I-23-9 in the temporary edition).

[2] The leading case is *Mersey Paper Co. Ltd.* v. *County of Queens* (1959), 18 D.L.R. (2d) 19, 42 M.P.R. 297, (N.S.S.C. en banc, per Ilsley, C.J.).

[3] *Report,* pp. 27-67.

[4] *Report,* Volume I, p. 139 (p. I-27-1 in the temporary edition). For a survey of recent progress in Nova Scotia assessment practices, see H. S. MacGlashen, "Progress and Problems in Nova Scotia," *Aspects,* no. 4 (August, 1971), pp. 7-8.

[5] Copies of Volume I of the Report, Summary & Recommendations, are available from the Nova Scotia Government Bookstore, 1683 Barrington Street, P.O. Box 637, Halifax, Nova Scotia, B3J 2T3, at $3.00. Copies of Chapter 27, Assessment, are available for $5.25.

QUESTION & ANSWER

Q: *A number of assessors would like some clarification of the relationship between the Assessment Division and the Institute of Municipal Assessors. If an assessor chooses not to become a member of the Institute, will his employment status be affected in any way?*

A: *No, his employment status with the Ministry is not conditional on membership in the Institute of Municipal Assessors. The working relationship is simply a professional one in that the Institute is a qualifying body whose function is to ensure that an assessor achieves and maintains acceptable levels of proficiency in his occupation. The I.M.A. also conducts training programmes, organizes meetings, publishes various materials, and does a number of other things to insure that assessors are well-informed and maintain at least some minimal qualifications. However, membership is not a condition of employment in the Assessment Division, and whether or not any person becomes a member or retains membership will not affect his job.*

Q: *Could you comment on the recent attempts to promote legislation which would require appraisers to be licensed?*

A: *We have seen a copy of a bill which purports to be a piece of legislation whereby the Appraisal Institute of Canada will become the licensing body for all persons involved in valuation work. We objected very strenuously to this proposal, because we do not believe that the Appraisal Institute of Canada is the only such body which should attain this kind of status. Certainly, in my opinion, the Appraisal Institute's graduates are no better organized or better trained than most of the assessors who are trained by the Ministry of Revenue. Granted, to some extent the work of assessors and appraisers differs, because of the mass volume approach on the one hand and individual appraisals on the other. However, the basic qualifications that are required to be proficient as a valuer of property are equally necessary for the assessor and the appraiser. Therefore, we certainly would not support any attempt by the Appraisal Institute to become the sole licensing body on their own, exclusive of the assessment staff of this Ministry.*

Q: *The regional offices in Metro Toronto and other urban areas are finding it increasingly difficult to hire and keep assessors because of high living costs. Do you foresee any possibility of instituting salary differentials for the assessors in these regions in order to compensate for this?*

A: *Well, first and foremost, I'm not sure that they are finding it increasingly difficult to keep assessors. One of our problems over the last four years has been to entice assessors to move to better jobs outside Toronto from Toronto. Clearly, they haven't been interested in applying for the promotional opportunities in other parts of the Province, which has led us to believe that it is almost impossible to get them out of the Toronto area. On the other hand, it is probably equally difficult to get people to move from the more remote regions to Toronto because of the differential in the cost of living. I'm not sure if urban offices are finding it difficult to hire new people, but it may very well be true. However, in answer to the question itself, it is the policy of the Civil Service Commission of the government of Ontario not to pay salary differentials from one region to another for any class of employee, and I am sure that assessors are no different from any other employees, professional or otherwise, in the government service. There are undoubtedly other classifications which have some people working in Toronto and others doing similar jobs in other parts of the Province, with the same pay scales in every instance. So if the assessor category suffers, then I would imagine that all others suffer too, and in the same proportion. At the moment, it is the stated policy of the government not to pay differentials, and I frankly don't think that this is going to change. There are a lot of problems associated with differential salaries. For example, one of them came up yesterday, when the recent offer made by the Federal Government to a group of its employees was found to be unacceptable in certain*

MR. P. G. GILLIS SPEAKS ON LICENSING, RELATIONS WITH THE IMA, AND THE VALUATION FILE.

parts of Canada simply because there are salary differentials, and the percentage increase for the lower salaries didn't provide the same wage increase as it did for the higher. So there are a lot of difficulties, and I don't think the Province will institute a system of differentials.

Q: *Prior to the Valuation File, the major emphasis has always been on the cost approach to assessment. The File, with its rapid retrieval capabilities, will make available to the regional offices large amounts of data for other valuation methods. Will the existence of the Valuation File reduce the reliance on the cost approach in favour of the comparative sales and other approaches to value?*

A: *Yes, it will. It will, and it must. I think we are already moving away from the cost approach as a method of valuation. Certainly for a vast number of residential properties and properties that are very similar to residential, we should rely exclusively on the market data approach; and in the case of commercial properties, we should move to the income approach to produce values, rather than on the cost method. This transition may not be completed for several years, but clearly by 1977, 1978 or 1979, our reliance ought to be on these other methods in the Valuation File rather than on the cost manual.*

Q: *How will the Valuation File be updated when assessments begin to lose touch with sale prices? How often will updating be done?*

A: *I don't think we're in any position at the moment to state how often the updating will be done. But clearly the Valuation File and the development of the updating process include updating the sale prices as they change. And clearly this must be done on a regular basis, so that we do not lose touch with sale prices; otherwise, the File will be useless.*

Q: *Regional offices no longer have a copy of the current assessment roll. A number of assessors and clerks feel that this hinders the efficiency of their work on appeals, apportionments, and severances. Is it possible that this policy will be changed, and that the offices will once again receive a copy of the returned roll? And if not, what was the rationale for this decision in the first place?*

A: *No, the policy will not be changed, and the offices will not receive a copy of the returned roll. I am not convinced that this in any way hinders the efficiency of their work on appeals, apportionments or anything else. They have all the data, either on tape, computerized, or on printout forms and data revision sheets, and those can be used to do all of the work that they claim they are having trouble with. The major reason for getting away from the rolls has been the blind reliance on that particular printout as a data base for all successive rolls. As a result, corrections that are put into the computer, but not necessarily printed in that particular roll, tend to get lost. This is because people tend to go to the ever-handy roll – which carries outdated data – and forget to look at the data revision sheets, which are the ones with the latest printouts of any changes in the data base. Consequently, the same errors are repeated year after year, even though the names of the owners and the correct property descriptions have been entered into the File and printed out in the data revision sheets. Then when the field people check all this against the assessment roll, they change the corrected information back to the incorrect by virtue of this reliance on the assessment roll! That is exactly what has been happening, and that is why the offices no longer have a copy of the roll.* □

QUESTION & ANSWER

CADASTRES

And their relationship with real property assessment

Mr. Henssen is President of the International Office of Cadastre and Land Records. He is also Chief of the Department of Registration and Juridicial Affairs of the Central Directorate of Cadastre and Land Records in the Netherlands. The following is a revised version of the speech he presented at the Concepts of a Modern Cadastre Conference, in Ottawa, Ontario, October 23 and 24, 1974. [Ed.]

IR. J.L.G. HENSSEN
International Office of Cadastre
and Land Records
Apeldoorn, Netherlands

Introduction

Land, which is the basis of economic activity and, indeed, of the continued existence of human life itself, has been regarded throughout history as a valuable commodity. Land tenure in any country is closely related to its history, its climate, and the characteristics and customs of its people, along with their religious beliefs. The result has been the development of a system of land tenure and laws particular to each country. The ramifications are so complex that they present great difficulties to those who seek to amend land laws or to improve the existing land administration techniques and land registration systems.

It is with these systems that the International Federation of Surveyors is concerned, insofar as they apply to the practice of professional land surveyors. The International Federation realized that something more tangible and suitable than congresses was required because of the magnitude of the problem, if progress was to be made by all interested persons or countries. Therefore, shortly after World War II it was decided to set up a permanent organization to collect under one roof as much documentary evidence and information as possible from all sources on the subjects of land laws, land records and cadastral survey procedures. The tasks of this organization would be:

– to collect, systematically file and index documents relating to existing cadastral and land registration systems;
– to make and publish comparative studies; and
– to give information and advice.

Since 1958 the organization's official title has been "Office International du Cadastre et du Régime Foncier", but it is also known by the English title of "International Office of Cadastre and Land Records". When collecting and distributing information and advice, the Bureau in Apeldoorn, Netherlands, not only resorts to the collection of data on file in its library, but also appeals to a network of expert correspondents in the field of cadastre and land registration in nearly one hundred countries.

What is a cadastre?

The term "cadastre" means a methodically arranged public inventory of the properties within a certain country or district, based on a survey of their boundaries; such properties are systematically identified by means of a separate designation on a large scaled map which forms a unit together with the registers, conveniently showing – for each separate property – the legal situation of every parcel of real estate, and also other relevant data with regard to state, nature and size of the property, etc.

Cadastres, as a rule, consist of a map of the survey, a register arranged according to parcels, a register arranged according to proprietors, and auxiliary registers for easier handling. The single parcels are systematically numbered on the map. The connection between map and registers is established by denoting the parcels in the registers by their map numbers. In this way, an unbreakable connection is created between the diagram of the parcel on the large-scale map and information contained in the register. This method also gives information on the rightful claimants and on certain characteristics such as size, value, etc.

The basic elements of any cadastre are:

– an unambiguous definition of parcels, which are measured and represented on a map, and
– a related record giving the required data about these parcels.

Historical background

Seen from an historic point of view, the cradle of present-day cadastres stood in Continental Europe, where in the beginning of the 19th century fiscal cadastres were established everywhere. This development was in accordance with the Physiocrats' economic principles that land is the basis of all riches, so that the funds for the maintenance of society should be obtained mainly by taxing landed property.

During this period and long afterward, the principal part of the State revenues was obtained by levying a land tax, ultimately based on the taxable revenue of the separate ground parcels and buildings, subdivided according to their different uses, such as agricultural lands or meadows, orchards, woods, houses, factories, workshops, etc. During the survey, the area of land as located in the field is recorded as a lot, provided it belongs to the same proprietor and has the same type of use.

This delineation of land according to its use is required for fiscal reasons because the tax rates are set according to land use, in order to simplify the computation of yields.

Every type of land use had a different taxable base upon which, in accordance with the requisite tariffs, a separate tax assessment was imposed. As a result, the custom in all these countries, having a system based on mensuration of parcels, was to split up real estate parcels for reasons of taxation systematics. In practical application, these real estate parcels were divided into small units, showing a different kind of use or cultivation, and were given a separate identification number. During the survey, the names of property/holders of the surveyed parcels are taken down, partly on the basis of a local investigation and partly by examination of the available documents relating to the parcels involved.

Cadastres, from the day of their institution on the basis of mensuration of boundaries and examination of the legal status of the real estate parcels, have been known to consist of two parts, namely an administrative part — the registers — and a figurative part — the maps and their underlying documents. The map clearly shows the parcel boundary in connection with its surroundings. In the registers we find particulars with regard to the rightful claimants, size, type of culture, valuation class of the relating parcel, etc.

Maps and registers

Map and registers are closely linked together by means of the parcel identification, which is the number that has been placed inside the boundaries of the parcel as indicated on the large-scale map. In the same way as the name of a person distinguishes him from other people, the reference number of a parcel represents a specific portion of the earth's surface, with its extent and boundaries, and serves to connect surveys and registers.

For reasons of efficiency, these parcel numbers should not contain too many figures. Therefore, it is the custom in the majority of countries keeping a cadastre to adapt their numbering system to the existing units of government, for example the municipalities, and to split up these units from the administrative and topographic points of view into possibly more sharply bounded zones of numbering, so-called sections or blocks, each with its proper name, letter or number. Such sections or blocks can, if necessary, be subdivided into still smaller units of numbering. This definite parcel numbering becomes an expression of the principle of speciality and is therefore based upon the smallest chosen numbering code, for instance from the parcel number via block indication and section to the name of the municipality and the province or country, or in the opposite order.

The indication of parcel and parcel number on the cadastral map is the simplest method of correlating the location and size of a particular plot of ground and its situation within the national territory as a whole, while the cadastral measures, which form the basis of the cadastral map, give the correct boundaries of each separate parcel.

In most countries with a cadastre, the measurements are laid down in field sketches or in aerial photographs showing particulars on real rights and topographic details pertaining to the newly-created property parcels. The sizes of these new parcels are calculated either graphically or with the help of coordinates of the turning points of their boundaries. The numbering of newly created parcels is actualized according to various systems, differing from one country to another.

Systems of numbering

In general, these systems of numbering include three groups, namely:

1. On the basis of the origin, which includes a reference to the mother parcel number on the map, in the shape of a fraction and serving as an identification number. This *fraction system* can be recognized in the methods of renumbering in Germany, Austria, Finland and Bulgaria.
2. On the basis of the origin, with the mother parcel number as the identification number, to which a letter or figure index is added. This *affiliation system* is used in Belgium.
3. The so-called *free-numbering system,* which means that the newly-created parcel is given the next unused parcel number of the section or block in which it is situated. This third system is in vogue in Switzerland, Iran, the Netherlands and several North American countries. A gradually increasing number of countries are beginning to adopt this system in cases of alteration or creation of new parcel boundaries.

Recently a new tendency has arisen with regard to the numbering of the individual parcels, namely the tendency to identify them also with the aid of coordinates. This should be realized either by means of the coordinates of the center of gravity of the relating parcel, or by means of the coordinates of one of its angular points or of a fixed point within the parcel, marked with a stone.

This new system is being instituted in order to make the automation of the cadastral administration more effective, so that it can be combined with other administrations which include data that relates to the ground, by means of an integration key formed by the parcel coordinates. If, in this case, the parcels have been identified with the same coordinates for computer use, then it will be much easier to collect data concerning a vast area, for instance on behalf of community planning, than by means of the conventional parcel designation.

Information found in cadastres

One might say that nearly all the cadastres have been made subservient to the identification of property units as subjects of legal actions to be registered in the legal registers. Beyond this, cadastral data are also used in many countries for a variety of other objectives. The manner of describing the details of cadastral units in the cadastral registers depends on their primary qualities, considered from an economic point of view.

The location of the land and the nature of the soil are decisive factors, as they determine the extent of land use and consequently the yield of landed property and its value. Therefore, the cadastres should generally record the following particulars:

1. Proprietors, or underlying rightful claimant;
2. The parcel, with its number and the names of the rights attached to the parcel and with a reference to the legal register;
3. Size;
4. Location, including street, number, field, or other reference;
5. Type of land use or exploitation;
6. Nature of soil;
7. Quality of the soil, within agricultural properties;
8. Superficial contents;
9. Value of the parcel;
10. Revenue per annum, or a fixed revenue of the parcel for a longer or shorter period;
11. Tax rate; and
12. The name of the taxpayer (proprietor or user).

As I mentioned before, in many countries it is a matter of interest for the Government, on behalf of a property tax, to know which subject (proprietor and/or owner of the underlying real rights) corresponds to which object (property unit). Also, for reasons other than tax levies, an increasing number of states have a vested interest in this matter.

Multi-purpose cadastres

In the course of the last several decades, there have been an explosive increase of the world's population and continuous technical expansion and industrialization, and consequently, there has been an ever-increasing demand for property, coupled with a steady rise in its economic value. In a growing number of countries, the governments, as the guardians of the common interest, are having to deal with space planning problems, which implies that the real state of the millions of parcels into which a country is divided is at issue.

With such a multi-purpose cadastre the following advantages can be obtained:

1. Consequent stimulation of the land market and investment in land, particularly through longer time credit secured on land. Most banking institutions insist on plans and good title before giving loans or mortgages. Development of both rural and urban land often requires more means than the owners can produce themselves.
2. Machinery for assessing and levying land taxes. Historically, cadastres were often first established for this reason.
3. Public planning of all kinds; the need for urban planning, housing and transport planning is tremendous. The large scale cadastral map, with the addition of other essential data such as contouring, is a vital tool for public health or engineering works, while the related records can provide equally essential information on owners, land values, buildings, etc.
4. Agricultural statistics, electoral registers, assessment books and statistics concerning enterprises, buildings, etc., can be built up in the same way, and grouped by reference to the parcels on which the different activities take place or the people live.

Every country needs an impartial institution in charge of the administration of land property (Land Registration and Cadastre) which, in addition to the legal data, will have to include all other information about the land. This is necessary in view of legal security and protection, and on behalf of many provisions in the fields of social welfare, town and country planning, etc., including the levying of land taxes. Since this is a question of common interest, this impartial institution should be a government service. Any similar administration (including registers and maps) will only then yield optimal benefits for its users, if it is set up on the basis of uniformity, and is kept strictly up-to-date.

Uniformity of data organization

In order to facilitate and warrant the above uniformity of administration, the Government should lay down compulsory rules for the entire country or territory. The lack of such rules might easily lead to data processing at random. With regard to the insertion of the legal situation in this administration, it would be commendable to issue imperative rules for the publication of the eventual mutations of that situation. The ideal solution with regard to the legal responsibilities to be attached to the data published by the administration would be to have no such force attached to non-published data.

Before the establishment or improvement of a system of land administration (cadastre), it is important to know beforehand to which purpose(s) it will be applied, and the time limits for realizing the goals. Furthermore, there will have to be discussions among such disciplines as would frequently need information relating to data concerning ground parcels. In this connection, some attention should be focused on the incorporation of data concerning landed property (multi-purpose cadastre).

The introduction of an inventory of landed property by means of a cadastral department requires close cooperation among legal, administrative and technical experts, who will be able to give sound advice regarding the most suitable and efficient systems. Because the establishment and maintenance of a department of landed property is a problem involving the whole country, the competent authorities should be aware of the desirability of a training programme for the craftsmen who will execute the various tasks. It goes without saying that the responsible officers might profit greatly from the experiences made already in other countries.

Political and economic impacts

If we take the trouble of looking into the history of the cadastre, we can see from many examples that its establishment frequently gave rise to political trouble. Land registration, valuation and tax assessment procedures were always suspiciously watched by a certain part of the population. However, the political and social importance of the land tax, as well as its economic implications, should not by any means be underrated.

It is particularly in its initial phases that the land tax may be considered an important source of national income and an essential factor contributing towards the infrastructural development of younger countries. In apportioning taxes, however, due regard must be given to social viewpoints, so as to avoid over-taxation of small parcels of land, for with the increasing rate of industrialization and in view of the growing number of other types of taxes such as wage tax, business tax, income tax, etc., the share of land tax as against total tax revenues is less important than it was in former days.

However, land taxes will be always raised in countries where private property exists. The assessment of a land tax is above all based on the identification of 1) the tax subject, 2) the tax object, and 3) valuation. The identification of the tax subject, or taxpayer, should be always coupled with the identification of the landowner or land user. In valuating the tax, it is not as important to determine the absolute value of the tax object as it is to assess its relative value in proportion to other tax objects of a similar kind. The tax value, which is almost commensurate with the fair market value, is assessed according to size of area and value per unit area. Since the value per unit area is often determined less accurately, i.e. on the basis of estimates rather than the size of the parcel, the opinion can be that the measurements which are only for the purpose of establishing a mere fiscal cadastre need not be *too* exact. In order to be able to raise land tax as quickly as possible, the authorities must consider the possibilities of aerial survey for this one special purpose. It will be clear that an estimate of the total costs, which are required for the realization of such an operation, will also have to be taken into consideration.

Cadastres and assessment

The real property tax is an annual levy based on the real property assessment. Added to this tax can be a personal property tax on items such as furnishings not otherwise taxed. These items would also be assessed by the assessor while he inspects real property. Valuation of real property can be made for various other purposes in addition to real property taxation, including sale, purchase, land reform, mortgage, insurance, compensation of different kinds, damages and death duties.

An official who evaluates property for purposes of taxation is generally called an assessor. For property tax purposes, the assessor must list all property and all persons subject to tax. In most countries he is also the person who provides the cadastral bureaus with the taxation data which they enter into the cadastral registers. The financial authorities are, of course, in charge of levying the taxes.

Much of the information collected by assessors of real property is useful for other governmental departments as well. It therefore has often been included in the items carried by a cadastre.

This cadastre can practically always provide all items of relevant information regarding the parcel itself, such as frontage, depth and area. It should also provide most of the items of information regarding buildings, such as the number of storeys, dwelling units and rooms, and the floor area of the buildings located on a parcel. Land use should also be defined in the cadastre and, depending upon the use of the land for farming, pasture, or residential or commercial purposes, other items of information may be included. The use categories should be coded to a level of detail that will satisfy all users of this information. For example, for agriculturally used land, items describing the soil type such as mineral composition, root zone, rockiness and permeability may be of interest. This can be combined into a soil class number which, multiplied with the area, can result in a harvest expectance or agricultural productivity number upon which the valuation of land can be based.

Area and frontage of a parcel, already mentioned, and possibly additional information regarding buildings, will be useful in the valuation of land used primarily for residential purposes. In addition, information about services provided to the parcel, which should also be integrated into the cadastral data, will prove valuable.

Assessment of real property is particularly important in view of compensation payable in the case of expropriation. In practically all western societies, no one may be deprived of his property except for purposes of public utility and with adequate compensation. The latter requires that a just valuation be made first and that the compensation be paid.

Cadastres and valuation

A vital step in property valuation is the definition of the value to be estimated. A property can have more than one value at the same time. The market value of a property is the prediction of its most probable selling price, based on the past behaviour of typical purchasers; the value for insurance purposes, at the same date, is based on the reproduction cost of a building (usually not including its foundation or the land) but *less* depreciation; the value to the owner, again at the same date, could involve an item such as a large area with a special use structure controlled as to humidity, temperature and absence of dust which is vitally important for the manufacture of one of the owner's products.

Depending on the object pursued, valuation authorities can accept, for instance, one of the following five methods by which value for different taxation purposes could be achieved:

a) A recent free sale of the property itself, where neither the conditions of the property nor of the market have since changed;
b) Recent free sales of identical properties in the same neighbourhood and market;
c) Recent free sales of comparable properties;
d) The price which the revenue-producing possibilities of the property will command;
e) The depreciated replacement cost, which is determined by replacing the structure with a new structure, utilizing today's building materials and today's construction costs, and then depreciating the structure to its present condition.

Problems for developing nations today

When at the beginning of the preceding century many West European countries proceeded to administration of landed property and of the buildings thereon, the authorities had to face some of the same problems in which many developing countries are now involved. However, in that era of economic stability, the basis chosen for the ground tax was the annual rent of the landed properties and buildings. For the buildings, the average annual rent over a series of years was generally chosen as the basis of taxation; land parcels and fragments of parcels were taxed by means of an average annual rent over a number of years. Public buildings and other properties of common interest were not assessed. The idea was to keep the taxations up-to-date and to have them periodically renewed.

This design, however, was in most cases abandoned after the first updating because of the high costs involved, and replaced by an assessment of the newly created objects based on a comparison with similar objects of an earlier date. Though the latter system had given rise to an ever-increasing number of problems for assessors before World War II, many years elapsed before it became obvious that the yield of the ground tax, which is indeed one of the

principal sources of revenue for the young countries of our time, gradually had dwindled to a rather insignificant amount in the budget of countries having a system of long standing. This was due, among other things, to the enormous rise of prices in every respect (wages, management, equipment) and the high costs of revaluation activities. Besides, the "established" countries have available a variety of other sources of revenue, which are obtained by taxing such objects as can be developed by the younger countries only *after* they have secured the ground tax revenue. Among these other sources are the income tax, the sales tax, dividend and partnership taxes, and the luxury tax.

Therefore, to many younger countries, the implementation of a rational and efficiently working ground tax system may be just a matter of to be or not to be. Particularly insofar as taxation is concerned, they will be able to profit from the experiences of their predecessors, the longer-established countries. Meanwhile, it has become clear already that the younger countries are fully aware of the fact that the basic condition for the attainment of this end is the introduction of a stable source of revenue. Hence, a choice could be made from among the aforementioned systems. The ease and efficiency of the procedure will greatly depend on a well-considered establishment of the property tax, which means that in introducing the chosen system, preference should be given to the most densely crowded districts with a predominantly wealthy population. This pattern is to be found, among other places, in Mexico, where a start was made in the thriving province of Toluca with the establishment of a rounded-off, smoothly operating and completely automatized system.

It goes without saying that the choice of every separate country depends on its national legislation, the prevailing customary rights, its social structure, etc. In comparison with the countries that had to face the same problems about 150 years ago, the younger countries enjoy the privilege not only of being able to profit by their predecessors' mistakes, but of asking for professional advice and even assistance, owing to the ever-increasing communications potential and the irresistible demand for co-operation, which has become manifest also in our field of action.

Conclusion

Finally I should like to say a few words about the role of the valuer, taxator, assessor, appraiser and other officials involved in the valuation of property.

Considering the fact that the majority of countries with an existing cadastre tend toward the development of a multi-purpose cadastre as one of the main pillars of a complete central data-bank system for immovable property, it seems an inevitable conclusion that the final goal should be to unite all these different versions of the same profession. This could be achieved by bringing them under one and the same denominator as state officials by the name of assessors, who are to receive their training under the supervision of experts nominated by the Government.

It will be obvious that in countries where the profession of assessor, appraiser or valuer has, so far, been a private affair, a law should be enacted for the purpose of bringing the office under state control. This would, of course, imply that the government could take in hand the professional training, thus promoting the uniformity of systems, rates, etc. This is all the more cogent, universally, as the subject of amending our methods of valuation is very much under consideration in view of the growing need of data banks in almost every sector of social life.

When I spoke about assessment and assessors, it was not my intention to claim that this assessment work should be the task of the cadastre offices. The cadastre offices can only handle the registration of the data which they receive from the assessor. But in view of the fact that the cadastres can efficiently and systematically register all relevant data concerning land, including valuation data, it seems obvious that a working relationship between assessor and cadastre could prove to be mutually beneficial. □

BIBLIOGRAPHY

Doblin, Claire (Division of Public Finance and Financial Institution, New York). "Land Valuation and Land Taxation (An Experience)," a paper presented to United Nations Interregional Seminar on Cadastral Surveying and Urban Mapping, West Berlin, June 24-July 5, 1974.

Kronk, E. A. (University of New Brunswick, Canada). "Land Valuation and Land Taxation", a paper presented to United Nations Interregional Seminar, West Berlin, June 24-July 5, 1974.

Nittinger, Professor Dr. (Technical University, Hanover, West Germany). "Cadastral Surveying as an Instrument of Political, Economic and Social Development", a paper presented to United Nations Interregional Seminar, West Berlin, June 24-July 5, 1974.

Ontario. Ministry of Revenue. A
Aspects

May 1975 1975
htkx c.1 BAS

DISTRIBUTION

Aspects is published quarterly, in the fall, winter, summer and spring. It is distributed without charge to all assessors and students of assessment administration. Interested persons outside the Assessment Division may be placed on *Aspects'* mailing list on request.

POLICY

Contributions and correspondence are welcome. Address all manuscripts and inquiries to the Advisory Committee member in your Area or directly to the Editor, Assessment Standards Branch, Assessment Division, Ministry of Revenue, Queens Park, Toronto, Ontario M7A 1X8.

Aspects reserves the right to make editorial changes in articles submitted. Unless otherwise arranged, manuscripts should be submitted in duplicate. Articles should not exceed twenty-five typewritten, double-spaced pages.

Ontario

Ministry of Revenue

Assessment Division